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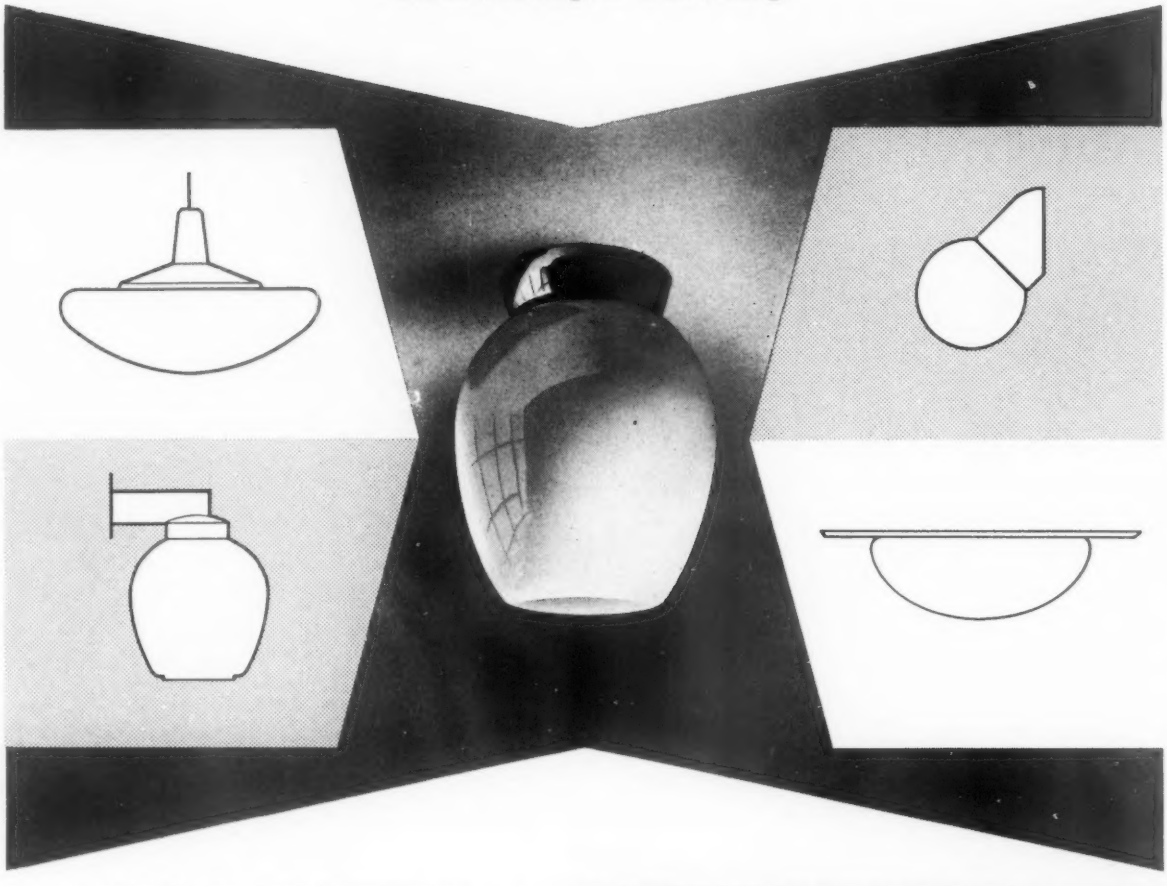

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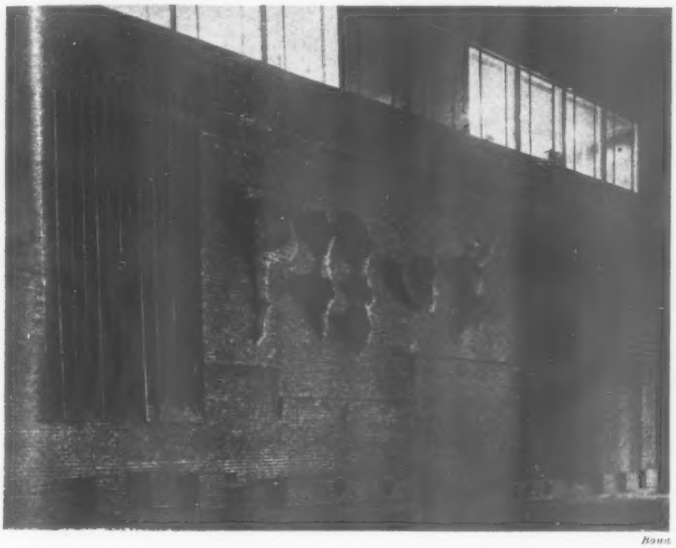
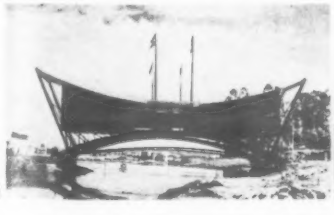
MARGINALIA

RELIEF IN BRICK. As part of the ceremony of inauguration of the new extensions to the celebrated Bouwcentrum in Rotterdam, a wall-sized relief in carved brick by Henry Moore was unveiled last December. The work was commissioned by the Dutch brick industry, and the version executed appears to differ from the 'accepted' project shown at Henry Moore's last exhibition in England. The technique and material are, of course, traditional in Holland from High Gothic to twentieth-century Amsterdam Eclectic, but seem to have revived in Moore a tendency which died out in the late thirties—using the grain or stratification of his material to contour and emphasize the forms of the sculpture.



1 *Bouw*

EXHIBITION-BRIDGE. The characteristic forms of Brazilian architecture are so generally associated with such materials as concrete and wood, that it is both surprising and salutary to see them appearing without impropriety or lack of structural logic in other materials. The *Volta Redonda* pavilion-on-a-bridge in Ibirapuera, 2, designed by Sergio Bernardes for the Brazilian state metal company, is something rare in Brazil, a steel structure. Mechanically complex, it combines arcuate and tension-structure forms in a manner that gives a striking publicity silhouette, and demonstrates the structural performance of the material in a dramatic manner. When the exhibition for which it was designed is over, the substructure of the pavilion, 3, will remain as a bridge, and a permanent contribution to the amenities of the park. (For another 'building on a bridge,' see *Marginalia*, AR, Feb. 56.)



2

3 *Modulo*

FORM FOLLOWS OFFICE ORGANIZATION: a rare expression of office organization in visible architectural terms can be seen in the new premises of the John B. Parkin Associates, outside Toronto, Canada. Though the international reputation of this office depends on their competition-winning design for the new headquarters of the Ontario Association of Architects (AR May, 1955), their domestic reputation and flourishing practise depend on their ability to design efficient buildings that work well and unassumingly—a kind of design that stems from close collaboration by specialists (three of the Associates are mechanical or structural engineers) rather than a hierarchy of designers. This expresses itself forcefully in the plan of their new building, for half the floor-space is devoted to one enormous drawing-office-cum-workroom, 4, without visual (or other) separation of function or administrative grade. The other half of the plan is occupied by more specialized accommodation—boardrooms, reception, filing, etc.—parcelled out in a cool and business-like manner, while this binary division expresses itself on the exterior by the single stanchion which divides the shorter elevation, just as the quiet and efficient tone of the organization is aptly indicated by the snug glass box which houses it, 5.

4

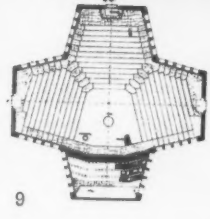
5

HELMUT HENTRICH. Though commonly regarded as an exponent of the German 'middle style,' on account of such buildings as his Trinkhaus Bank (AR, December, 1953), with its air of suppressed neo-Classicism, Helmut Hentrich has lately shown a much more adventurous approach to design, and with the new hundred-metre-high office block for Phoenix-Rheinrohr, 6, in Dusseldorf he has achieved a commercial building which departs definitively from the flat-slab and courtyard routines of German post-War work. This competition design, with which he and his partner Petschnigg won first prize out of twenty-one entries, clearly rivals the new Pirelli block in Milan in visual impact, if not in bulk, and as with the Pirelli block one's immediate temptation is to refer the plan-form, 7, back to Le Corbusier's Algiers scheme for its inspiration. But just as Pirelli proves to derive from something deeper than mere emulation of a masterpiece (*see* AR February, 1956) so does Phoenix-Rheinrohr, for the same tendency to polygonal planning without right-angles can be seen in other recent works by Hentrich, such as the church at Duren, 8, where it modifies the time-honoured greek-cross to produce a Protestant 'auditory' that strikes a just balance between centralizing and longitudinal tendencies, 9.

6

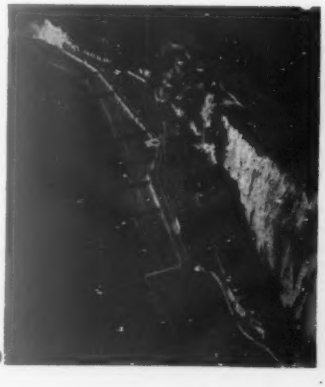
7

8 *Bouw*



9

DESIGN FOR VIEWING. The best cure for subtopia is prevention—but prevention of the constructive, not the restrictive, kind. A Channel-side beauty-spot where car-borne visitors crowd to watch the sea and ships, without leaving their cars, sounds an ideal setting for a mess, but the plan for St. Margaret's Bay, near Dover, by G. A. Jellicoe and Partners, 10, aims to strangle subtopian tendencies at birth by providing better alternatives. Wartime military dereliction has provided virtual *tabula rasa* for redevelopment (in so far as land-ownership permits) and the new scheme takes the car-parking problem in hand from the start, providing a concentrated viewing-parking area at the foot of the concealed cliff-road



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(upper centre of illustration)—compare the ARCHITECTURAL REVIEW's scheme for riverside rehabilitation at Bewdley (AR, November, 1953)—a largely-hidden long-stoppers' car-park among the buildings (lower centre) and treating the rest of the somewhat limited area of level ground as strictly pedestrian, with new constructions oriented at right-angles to the shore-line to shelter the main pedestrian area from raking, coast-wise winds.

The Townscape Tradition

After Professor Pevsner's observations on the past and future of English Town Planning in his Reith Lectures, attention was drawn to a forgotten article by H. B. Creswell which had appeared in two parts in the *Architects' Journal* for December 10 and 17, 1924. Written when the garden-city type of plan was already degenerating into a rule-of-thumb, and the Canberra competition was a skeleton in many cupboards, this article constitutes a remarkably prophetic attack on paper planning, confronting designers with many of the same problems of conscience and method that have been scrutinized in the last decade in the ARCHITECTURAL REVIEW'S Townscape and Subtopia campaigns.

Thus: 'Town planning . . . more than any other architectural subject has become mired and obscured by the outpourings of experts' and 'He (the town planner) exercises his ingenuity to the neglect of his imagination, and tries to learn from science what sympathy alone can teach . . .' Mr. Creswell devotes much of his energy to demonstrating the fatuity of symmetrical and radial plans, which cannot be appreciated by the ordinary citizen perambulating the pavements of his town, and although that specific type of paper plan is no longer in vogue, his objections could apply, *mutatis mutandis*, to more recent types of diagrammatic planning based upon land values, density diagrams, universal characters of habitation and so forth.

Though the words by which he identifies the humane virtues of a town are not precisely those currently in use—mystery, variety, charm—his adherence to the central tradition of English design is made clear by his use of the word *picturesque* to define the over-all characteristics of the type of planning which, rather than the Renaissance, he regards as ideal. Now in his eighty-sixth year, Mr. Creswell is a rare and lively survivor of the days of Voysey and Aston Webb, and his reminiscences are as instructive as his prophecies. And now that private house-building is getting under way again in England, it is useful to recall that his celebrated *Honeywood File* and related works constitute a far more salutary cautionary code for the domestic architect than even the most exhaustive check-lists.

Intelligence

The Minister of Housing and Local Government has appointed Dr. W. G. Hoskins (reader in Economic History at Oxford University) to his advisory Committee on buildings of special architectural or historic interest. He has appointed Professor P. W. Richards and Mr. H. Wardale to the National Parks Commission.

Sir Percy Thomas & Son are the architects for the BBC's new Welsh Broadcasting headquarters to be begun at Llandaff in 1958.

CORRESPONDENCE

Outrage in the West

To the Editors,

SIRS,—New Year is a period when a wise person makes a resolution not to make good resolutions if he is critical enough to know that there is little chance of him putting those resolutions into effect. There seems to me to be a parallel here between our national plight as shown by your issue *Outrage* of last year with the good resolutions it shows to be possible, and the creeping doubt that anything will be done about it. It is because I am unwilling to harbour that particular doubt that I am writing to you.

One of the outstanding events of my year of 1955 was to show your *Outrage* issue to about 40 of my friends and business acquaintances who I fear would not otherwise have seen it. In most cases the response was sympathetic and even encouraging: in no case did anyone disagree with *all* aspects of your presentation of the problem though some objected to certain parts. Industrial ugliness was appreciated by all; but several could see no danger in an increasing subtopia.

My main point in writing is not however, to voice a miniature Public Opinion Poll, but to state that in my opinion all the problems you spotlighted in *Outrage* are present in distressing quantity in Swansea, and there is little probability as yet of any local objective recognition that remedial measures are necessary where they would be effective, or that radical far-seeing changes must be planned. I need hardly mention to you the industrial wastes which scarify the hinterland of Swansea. These should be such a warning that in future it should be ensured that the clearing of sites, the demolition of buildings and plant, the levelling or featuring of tips are as much part of the normal costs of any particular undertaking as the original exploitation of the land and erection of buildings were.

Surely, too, in Swansea, one can see the spread of subtopia over all and any type of landscape; valley, hillside, hilltop, coastal cliffs or bays; quite irrespective of whether this is justified scenically or economically. Furthermore, the Gower peninsula, now deemed to be of National Park status, is in danger of further encroachment by municipal action. There is also much disappointment with the new Swansea centre. There has been too much acceptance of mediocre building which is typical of many other town centres and little to enable a citizen to feel any individual pride in *his* town.

I am confident that active measures to combat the evils and errors of subtopia will only come as a result of continued action by such journals as yours, and I wish you success in future enterprises you undertake.

Yours, etc.,
CHARTERED SURVEYOR.

Mumbles, Swansea.

The New Brutalism

To the Editors,

SIRS,—After reading Reyner Banham's article on the 'New Brutalism' one wonders just what all the fuss is about. Is there really anything *new* in the 'New Brutalist creed? The definition of New Brutalist architecture (formal legibility or Image memorability, exhibition of structure, materials used as found) applies to almost the whole of Mies van der Rohe's architecture right from the Barcelona Pavilion through to his latest works on the IIT Campus, the Farnsworth house and the Mannheim theatre project. Yet, when the Mies Vernacular is introduced into England at Hunstanton, a building which Philip Johnson has described as a tribute to the genius of Mies van der Rohe, it has to be justified by yet another, and even more fabulous '—ism.'

Yet the only essential difference between a 'Mies building' and a 'Brutalist building' would seem to be in the degree of expression of the services of the building; and surely beyond a certain point such a display of the intestines of a building merely disturbs the total æsthetic emotion evoked by the building as an Image. No, however much we may be grateful to the Smithsons for introducing the Mies Vernacular to England and thus reminding us that honesty of structure and materials are essential canons of the Modern Movement, the attempts to justify that form of design followed relentlessly and without fuss by Mies van der Rohe seems both superfluous and partitious.

'Beauty is truth, truth is beauty, that is all ye know on earth, and all ye need to know.'

Yours, etc.,
Bristol. G. A. BROWN.

[The author replies: *There are times when one despairs of one's powers of explanation. It is clear that nothing beyond the second paragraph of page 358, or the last illustration on the facing page made any impression on Mr. Brown at all. Surely the second page of illustrations should have made clear to him, as no words can, that it was not a Mies vernacular that was under discussion—unless he can tell me what is Miesian about Yale Art Centre or the Sheffield University project? Far from attempting to justify Mies (could anything be more gratuitous?) I was trying to explain how it was that buildings so various in form could all be subsumed under the same 'stylistic' label as Hunstanton's pure Miesian rectangles.*

Had Mr. Brown pursued my argument as far as the last page he would have found that this attempted explanation led me into aesthetic and philosophical considerations that suggest that truth (to material, structure function) can be many other things beside beauty, and still, the Brutalists would maintain, be great architecture. If performance justifies these assertions (and I think it will) then there will indeed be something to make a fuss about, for the Brutalists will have pioneered a road out of the academic trap of thinking in exclusive *terms—beauty equals truth equals beauty, functionalism equals a glass box and nothing else—and made a way towards* inclusive *thinking, where architecture is everything you like to make it, provided performance (in every sense of the term) pragmatically proves you right.*]

Bomarzo

To the Editors,

SIRS,—Inspired by Mr. Colin Davidson's article in THE ARCHITECTURAL REVIEW on Orsini's phantastic rock monsters at Bomarzo, I visited them recently and, while there, wondered how these derelict fair-ground absurdities might possibly be used in combination with the art or life of today.

This question was answered a few days later when buying a newspaper at a kiosk in sight of that Baroque beauty, the Basilica of Santa Croce at Lecce, where the attached contemporary postcard, juxtaposing art of the sixteenth and twentieth centuries, caught my eye.

Yours, etc.,
British Embassy, Athens. NIGEL BICKNELL.

Above, left, cover by Gordon Cullen for AR, September 1954, and right a literal counterpart, both representing a mask in the Orsini garden at Bomarzo

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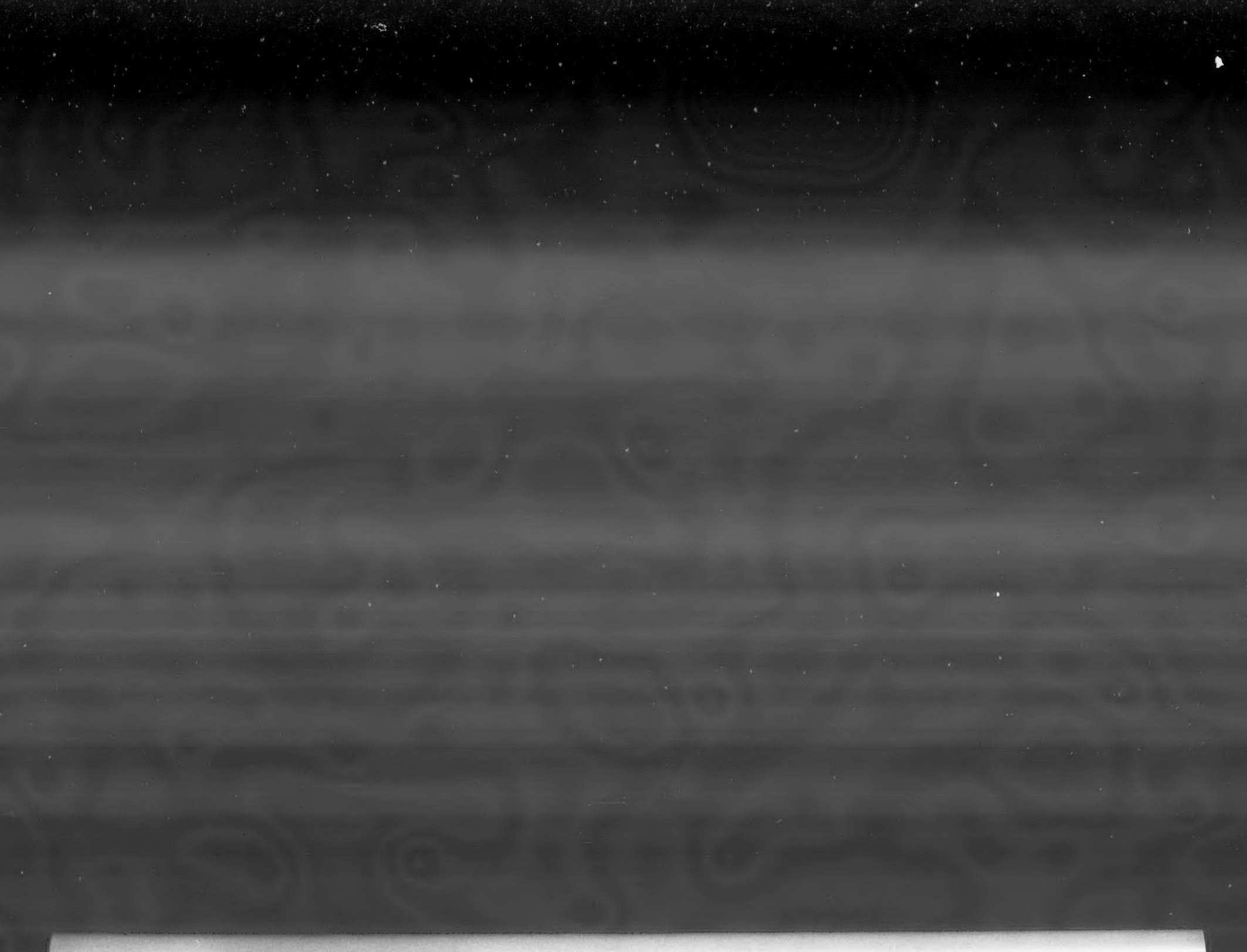
ACKNOWLEDGMENTS

The colour blocks on pages 163 and 167 were made available by courtesy of C. Miskin & Sons, Barrett & Wright Ltd. and Hadfields (Merton) Ltd.

COVER, Lemaire & Wennink. MARGINALIA, pages 151–2: 4, 5, H. Robertson; 6, 7, Paul Pepper; 10, Wainwright; Bomarzo (right), Grillo. RONCHAMP, pages 156–161: J. Stirling. SCHOOL AT PUTNEY, pages 162–9: Galwey, Arphot. OXFORD RELIEVED, page 170, Aero films; page 173, Country Life. GOLD COAST, pages 176–187: Peter Pitt. EDWARDIAN BEQUEST, pages 188–192: all except exhibit reproductions, Galwey. CURRENT ARCHITECTURE, pages 193–6: School at Herne Bay, Galwey; Hospital at Alexandria, Toomey, Arphot; Station at Potters Bar, J. R. Pantlin. MISCELLANY, pages 197–204: Exhibitions, 1, 5, Tate Gallery ; 3, 4, MMA; 6, S. Lambert; Oriel Chambers; 1, 7, Stewart Bale; rest, J. Stirling. Lumps on the Skyline: 2, Galwey; 4, Toomey; 8, S. W. Newbery. Gabo Sculpture, Lemaire & Wennink. SKILL, pages 205–216: Showrooms in Bond Street, Mann Bros.; Showrooms in Park Lane and Harrogate, E. Hyman; Shop in Hemel Hempstead, J. Hadland. Design Review: Mural, Toomey; Chandeliers, J. Wuidart.

Mr. Clifford S. Smith was associated with the author of 'Brewers' House Styles' (AR, December, 1955) in the selection of material.



THE ARCHITECTURAL REVIEW

Readers will find this issue a somewhat reduced version of the REVIEW'S *usual self, a result of the handicap that the* REVIEW, *in common with all other British magazines and many newspapers, has been placed under by the printing dispute. Several features have had to be held over, including an analysis of the Oxford road problem and the* REVIEW'S *recommendations for solving it, and these will be published as soon as circumstances allow. This issue, even in its reduced form, has been printed under considerable difficulties, which account for some irregularities in the numbering of the pages. The advertisement pages are also reduced in number, but these have not suffered so badly as the editorial pages owing to the chance that their printing was further advanced when the stoppage occurred.*

Volume 119 Number 711 March 1956

The cover shows a close-up of the lower part of a giant street-side sculpture, designed by Naum Gabo, which is to flank the walls of the new De Bijenkorf store in Rotterdam. This project will provide Gabo, after many disappointments, with an opportunity to realize his ambitions for architectonic sculpture on a scale worthy of his genius, and of the noble part that the idea of a synthesis of the constructive arts has played in the growth of twentieth-century design.

151 **Marginalia**

152 **Correspondence**

154 **Frontispiece**

155 **Ronchamp** *by James Stirling* The schism between two possible meanings of Functionalism, emphasizing the mechanization of structure in U.S.A., designing for human use in Europe, had already become apparent with Lever House and the *Unité* at Marseilles, but the emphasis on space and volume in Europe has probably reached its most extreme point in Le Corbusier's chapel at Ronchamp. This, Mr. Stirling observes, is the culmination of a tendency in Le Corbusier to proceed from the general to the particular, so that his recent works tend to be masterpieces of a purely personal kind, without the universality and programmatic quality of his earlier works. Nevertheless, his recent buildings have won a degree of popular acceptance that is still denied to his masterworks of the Twenties, and this may be due to the fact that their appeal is purely visual and does not demand intellectual participation. But also, now that contemporary painting no longer provides a laboratory of plastic research, architects tend more and more to draw on folk and popular arts for inspiration, a change of attitude that is paralleled by the independence of structure and material at Ronchamp, the same forms being used, in spite of a design change from framing to mass-walling. Le Corbusier, in fact, is no longer creating new forms according to a rational approach to structure, but simply drawing on, and mannerizing, his enormous formal erudition.

162 **School at Putney:** *Architects, Powell and Moya*

170 **An Edwardian Bequest** *by William Gaunt* Late Victorian taste in the Arts, and in the kind of architecture and interior decoration that took its standards from the lives and works of the late Victorian painters cannot be better seen in England than at the Russell Cotes Museum, Bournemouth. Collected, housed and bequeathed by Sir Merton Russell Cotes, whose fortunes had risen with those of Bournemouth and its Royal Bath Hotel, the paintings represent the manner of the well-connected artists who supplied large narrative paintings to a well-to-do clientele in the Seventies and Eighties, while the building itself, and its interior, projects, in Mr. Gaunt's phrase, 'a state of mind' rather than a style—a state of mind that is a compound of admiration for exotic buildings, and a desire to live a gracious life according to the manner that had been codified by the studio-houses of such representative masters as Lord Leighton and Alma Tadema.

175 **Current Architecture**

Skill

205 **Showrooms off Bond Street, W.1:** *Architects, Gordon and Ursula Bowyer*

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FIVE SHILLINGS

The continuing originality of Brazil's Oscar Niemeyer as an inventor of architectural form is dramatically emphasized by his project, opposite, for a Museum of Modern Art in Caracas, capital of the booming oil-state of Venezuela. Its spectacular aspect, perched on the edge of a nearly vertical cliff, arises from a desire to create a shape that should be more than merely functional, yet make maximum use of natural lighting, should take the eye by the purity of its line, and symbolize the creative force of the Modern Movement. The funnel-like shape, top, effectively expresses the way in which it catches the sunlight, filters it down through ranked sun-louvres flanking the roof terrace, centre, to flood over the suspended mezzanine, seen in an unroofed model, bottom, and down into the floors below.

James Stirling

RONCHAMP

LE CORBUSIER'S CHAPEL AND THE CRISIS OF RATIONALISM

With the simultaneous appearance of Lever House in New York and the Unité in Marseilles, it had become obvious that the stylistic schism between Europe and the New World had entered on a decisive phase. The issue of art or technology had divided the ideological basis of the modern movement, and the diverging styles apparent since Constructivism probably have their origin in the attempt to fuse Art Nouveau and late 19th century engineering. In the U.S.A., functionalism now means the adaptation to building of industrial processes and products, but in Europe it remains the essentially humanist method of designing to a specific use. The post-war architecture of America may appear brittle to Europeans and, by obviating the hierarchical disposition of elements, anonymous; however, this academic method of criticism may no longer be adequate in considering technological products of the 20th century. Yet this method would still appear valid in criticizing recent European architecture where the elaboration of space and form has continued without abatement; and the chapel by Le Corbusier may possibly be the most plastic building ever erected in the name of modern architecture.

The south tower of the chapel, emerging as a white thumb above the landscape, can be seen for many miles as one approaches the Swiss border. The rolling hills and green woodlands of the Haute-Saône are reminiscent of many parts of England and Wales, and the village of Ronchamp spreads along either side of the Dijon-Basle road. After climbing a steep and winding dirt-track, leading from the village through dense woodland,

one reaches the bald crown of the hill on which the chapel is situated. The sweep of the roof, inverting the curve of the ground, and a single dynamic gesture give the composition an expression of dramatic inevitability. The immediate impression is of a sudden encounter with an unnatural configuration of natural elements such as the granite rings at Stonehenge or the dolmens in Brittany.

Far from being monumental, the building has a considerable ethereal quality, principally as a result of the equivocal nature of the walls. The rendering, which is whitewashed over, has been hand thrown and has an impasto of about 2 inches. This veneer suggests a quality of weightlessness and gives the walls something of the appearance of papier-mâché.

Notwithstanding that both roof and walls curve and splay in several directions, the material difference of rendered walls and natural concrete roof maintains the conventional distinction between them. They are further distinguished on the south and east sides by a continuous 9-inch glazed strip, and though the roof is not visible on the north and west sides its contours are suggested by the outline of the parapet. There is a similarity between the chapel and the Einstein tower which is even less conventional, but only inasmuch as the walls and roof are fused into one expression.

The whitewashed rendering is applied to the interior as well as to the exterior and the openings scattered apparently at random over the south and north walls splay either inwards or outwards, similar to the reveals of gun-openings in coastal fortifications. On the inside of the west wall these openings splay inwards to such a degree that from the interior the surface takes on the appearance of a grille. It is through this grille that most of the daylight percolates to the interior, yet the overall effect is one of diffuse light so that, from a place in the congregation, no particular feature is spotlighted as in the manner of a Baroque church.

Where the roof dips to its lowest point, a double-barrelled gargoyle projects outwards to shoot rainwater into a shutter-patterned concrete tub. This element is surprisingly reminiscent of South Bank festivalia and something of the same spirit is conveyed by Le Corbusier in his stove-enamelled murals covering both sides of the processional entrance door. The same applies to the inscriptions on the coloured glass insets to the window openings. These linear applications suggest a final flourish and appear superfluous and even amateur in comparison with the overpowering virtuosity in moulding the contours of the solid masses.

The usual procedure in examining buildings—an inspection of the exterior followed by a tour of the interior—is reversed, and sightseers emerging on to the crown of the hill proceed to walk around the building clockwise, completing $1\frac{1}{2}$ circles before entering the chapel where they tend to become static, turning on their own axis to examine the interior.

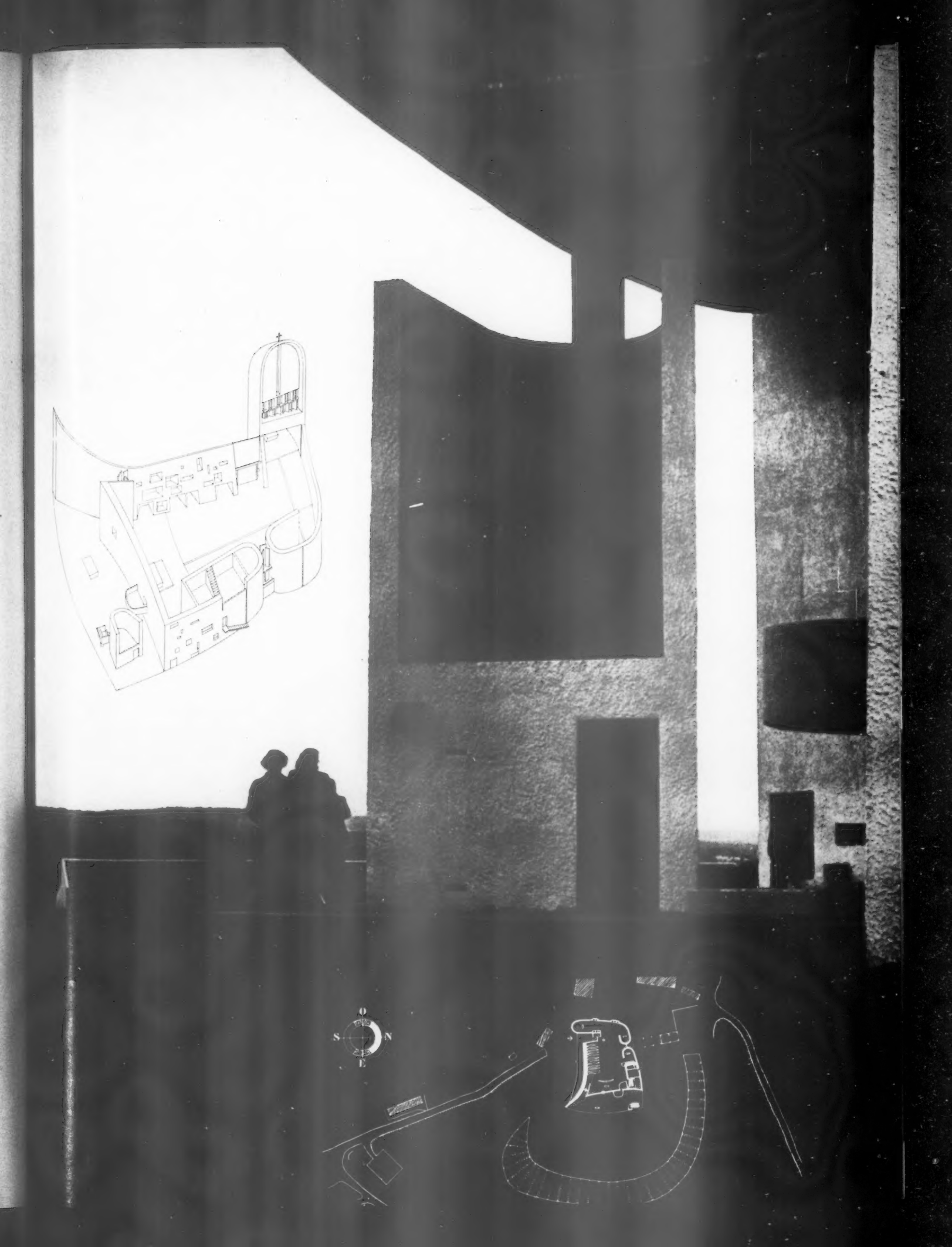
Echoing the sag of the roof, the concrete floor dips down to the altar-rail which appears to be a length of folded lead. The various altars are built up of blocks of polished pre-cast concrete (probably with a marble aggregate) which are cast to a marvellous precision. The roof, together with the concrete alms-boxes and swivel-door, represents an incredible French ingenuity in using this material.

The wall adjacent to the choir gallery stairs is painted a liturgical purple and the whitewash on the splayed reveals of the openings returns on to the purple wall to a width of 3 inches, thus resembling the painted window surrounds on houses around the Mediterranean coast. Small areas of green and yellow are painted over the rendering on either side of the main entrance and also on the reveals to the opening which contains the pivoting statue of the Madonna. The only large area of colour is confined to the north-east chapel and tower; this has been painted red for its entire height so that light pouring down from the top gives this surface the luminosity of 'Dayglow.' The three towers which catch the sun at different times of the day and pour light down on to the altars are in fact vertical extensions of each of the side chapels.

Even with a small congregation, the superb acoustics give a resonance suggesting a cathedral space and the people using the chapel do so naturally and without any sign of embarrassment. As a religious building, it functions extremely well and appears to be completely accepted. It is a fact that Le Corbusier's post-war architecture has considerable popular appeal. The local population, both at Marseilles and at Ronchamp, appear to be intensely proud of their buildings. Remembering the pre-war conflicts, it is difficult to ascertain whether the

1, The chapel under construction and before rendering the walls, which are of load-bearing stone taken from the old chapel.
2, Opposite, plan and axonometric superimposed on a view across the east wall, over the hostel towards Switzerland.

[*continued on page 161*



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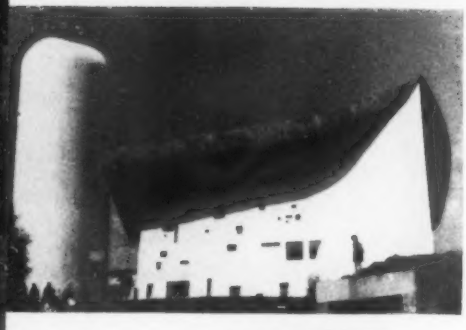

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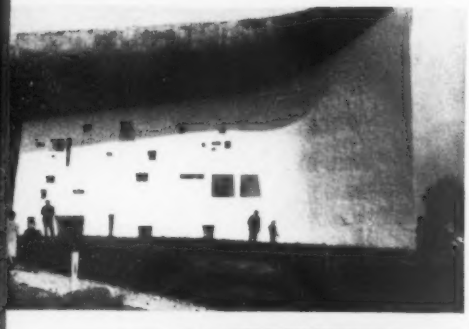

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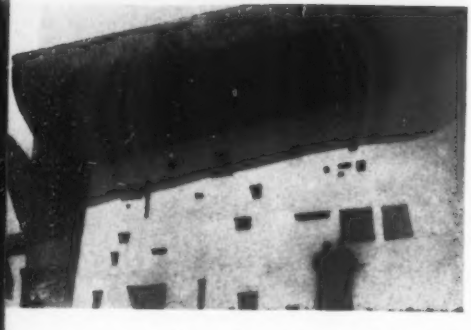
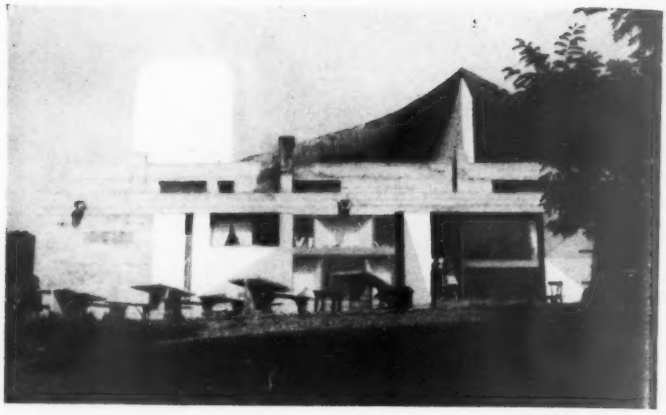


7

Above, the approach to the chapel. 3-7, the track, climbing from the village through a densely wooded area, only affords occasional views of the chapel, which suddenly comes into view (top photograph). The track continues to the ceremonial entrance past the hostel on the right and the priest's house on the left.



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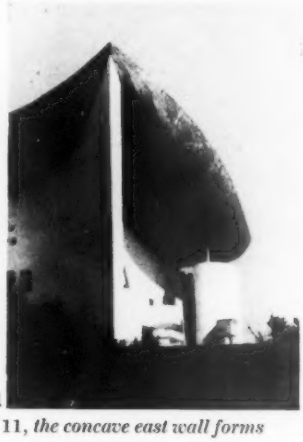
8, the chapel roof is seen above the hostel which is built throughout of in-situ concrete walls, incorporating timber and glass shelving units. Tables in the foreground are in precast concrete.

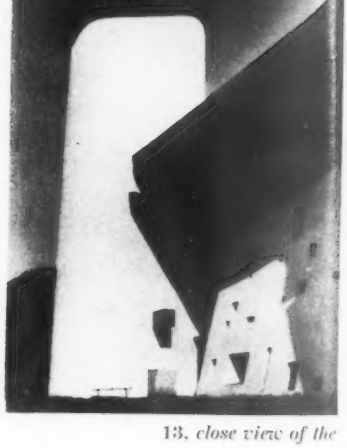


11

11, *the concave east wall forms a cyclorama for special services on pilgrimage days.*

12

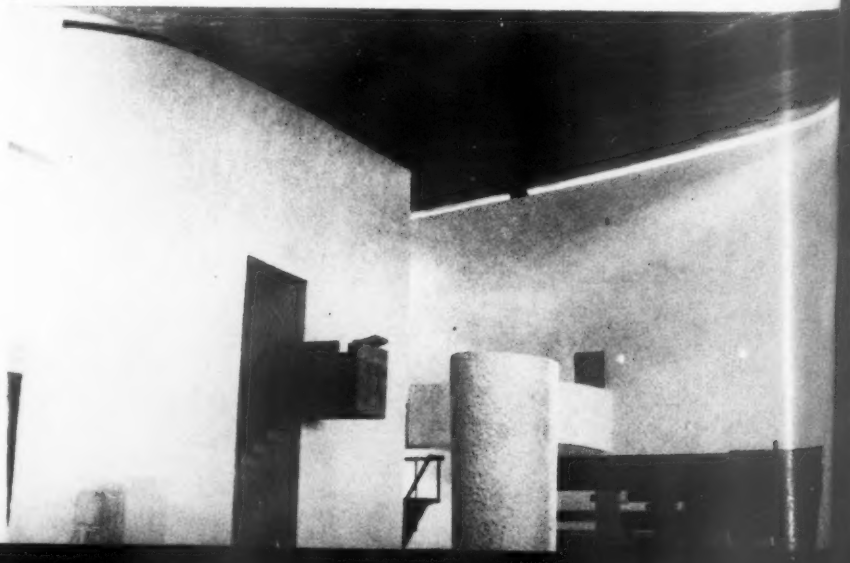
12, *view from the foot of the ziggurat marking the site of the previous chapel destroyed during the war, when it was used as an observation post.*

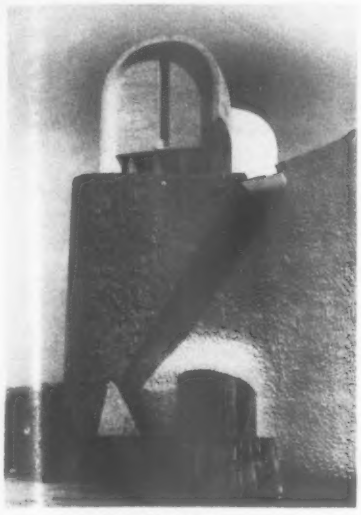


13

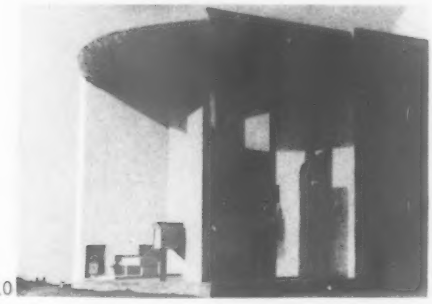
13, close view of the south wall with external altar and pulpit.

17

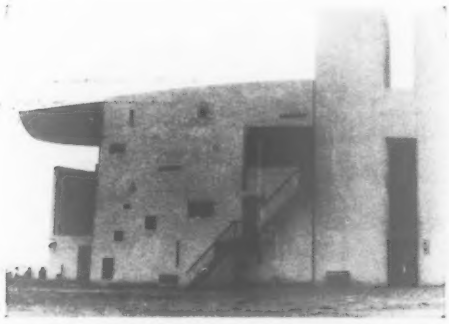




9, *the convex wall behind the rainwater tub denotes the position of the confessionals inside the chapel.*

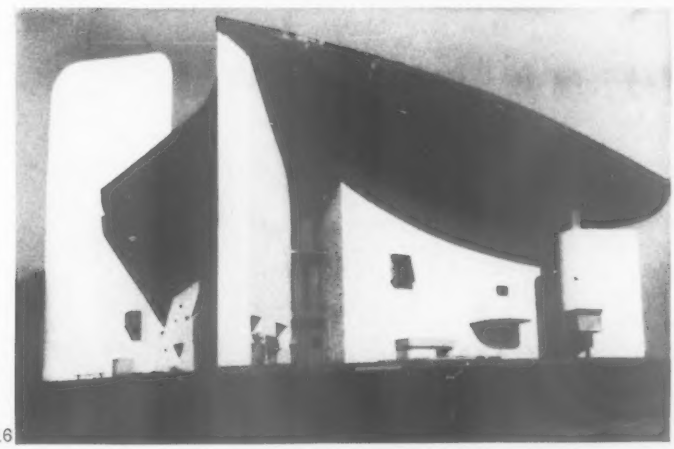


10, *the glazed strip between walls and roof cuts back into the side wall for a short distance on the corner.*



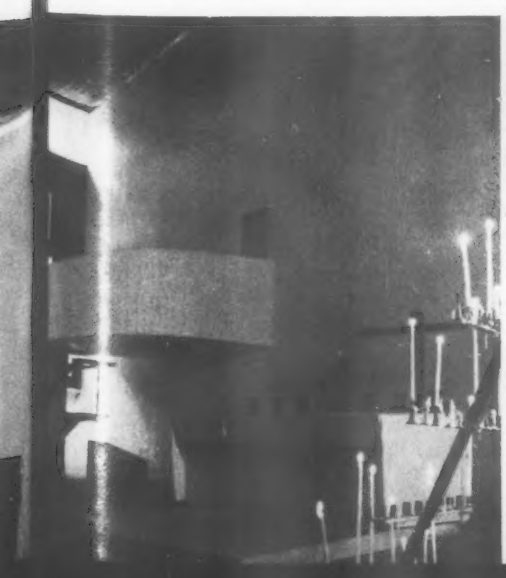
15, *the normal entrance between two of the side chapels. Note the expansion joint between the chapel tower and the main wall.*

14, *the side chapel towers are provided with a concrete grille which catches the sunlight at different times of day.*



16, *looking from the east towards the external altar and pulpit.*

Below, interior views of chapel. 17, *the glazed strip separating walls from roof continues round the interior as a groove on those sides where the roof does not overhang the walls externally. The foreground font is of precast concrete given a hammered finish.* 18, *purple wall to the left, flanking the staircase to the choir gallery. The altar is built up of precast concrete blocks.* 19, *view from beneath the choir gallery towards the ceremonial entrance.The roof sags to its lowest point approximately along the centre of the nave.* 20, *brightly coloured mural by Le Corbusier on the pivoting ceremonial entrance door.*



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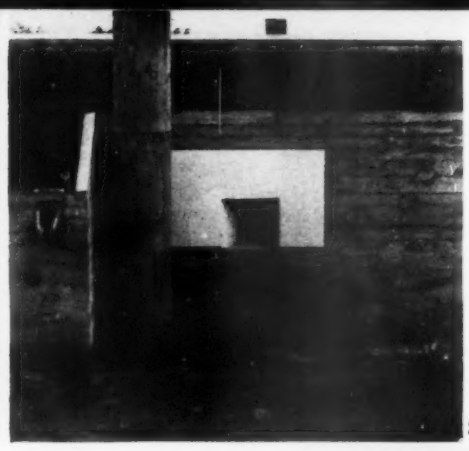
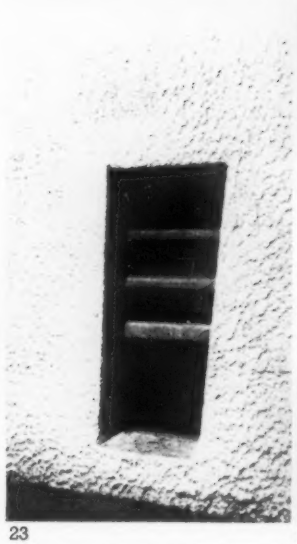


22

21, the ceremonial entrance. 22, rear of the hostel showing the grass-insulating roof, the surface of stones which have been set close against the shuttering and the white rendered window surround. 23 and 24, exterior and interior of the same window: the precast concrete transoms are pressed into the rendering on either reveal. The clear, coloured, or decorated glass insets are puttied into the transoms. 25, pivoting concrete door with in-situ louvres above.



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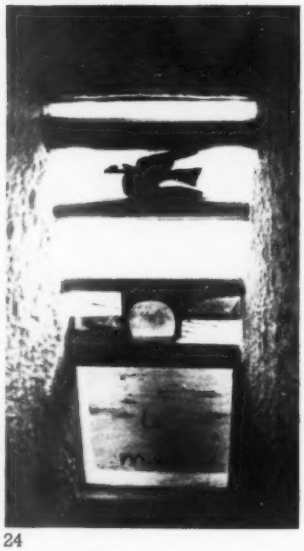

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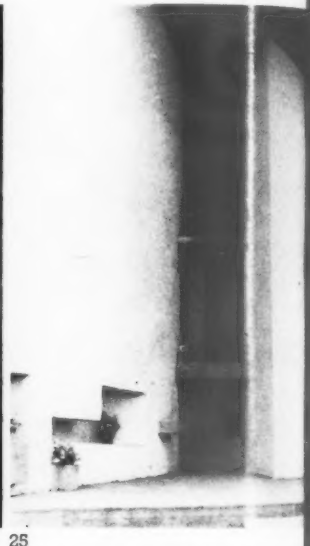

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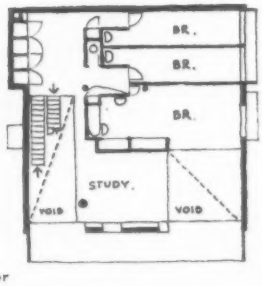
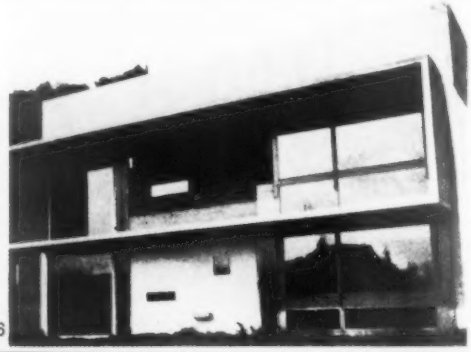


First Floor

House near Paris by Andre Wogensky

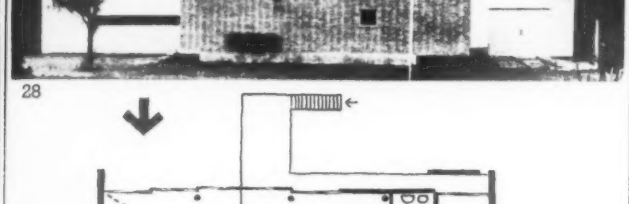


26

These three houses, generally regarded as being amongst the most important of European post war avant garde *architecture, all show similar trends towards the arbitrary. On neither front nor sides of the Wogensky house, 26, are the exciting double volumes of the interior apparent: the exterior not being the result of the interior. This external disregard of the section also occurs on the house outside Rotterdam, 28, which is further complicated by an ambiguity of structure part weight bearing, part steel frame. The horizontal slit windows and the rendering of the brick wall seem to refer to a concrete aesthetic. At Maison Jaoul, 27, the principle of triple brick structural walls panelled in at the short ends, and the balcony as an extension of the structural floors is most clearly stated. However, with the house closer to the road all principles are inverted, a balcony is propped up at the side and the non-structural end is bricked in. The flight from the 'academism' of pre-war modern is questionable when it produces an architecture of the irrational.*

27

Maison Jaoul by Le Corbusier



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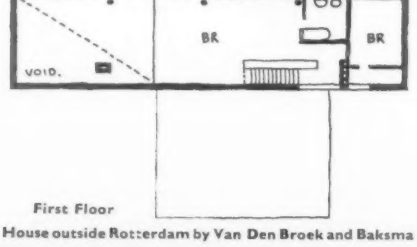


First Floor

House outside Rotterdam by Van Den Broek and Baksma

continued from page 156]

change is a social one, or whether it lies in the public or Le Corbusier. Garches is still regarded with suspicion by the public, either on account of its style or the manner of living of its inhabitants.

It may be considered that the Ronchamp chapel being a 'pure expression of poetry' and the symbol of an ancient ritual, should not therefore be criticised by the rationale of the modern movement. Remembering, however, that this is a product of Europe's greatest architect, it is important to consider whether this building should influence the course of modern architecture. The sensational impact of the chapel on the visitor is significantly not sustained for any great length of time and when the emotions subside there is little to appeal to the intellect, and nothing to analyse or stimulate curiosity. This entirely visual appeal and the lack of intellectual participation demanded from the public may partly account for its easy acceptance by the local population.

Basically it is not a concrete building, although it has all the appearance of a solidifying object; the walls, however, are constructed in weight-bearing masonry. The initial structural idea of outlining the form by a tubular metal frame wrapped over with wire-meshing on to which concrete was to be sprayed for some reason was not carried out. With no change in the conception, this outline was filled in with masonry, rendered over and whitewashed to the appearance of the initial idea. The interior of the west wall became so interrupted with openings that it was found necessary to imbed in the masonry a concrete frame to form around the window openings. This freedom from the precept of the correct use and expression of materials, apparent in other post-war European architecture, has little parallel in the New World where the exploitation of materials and the development of new techniques continues to expand the architectural vocabulary.

With the loss of direction in modern painting, European architects have been looking to popular art and folk architecture, mainly of an indigenous character, from which to extend their vocabulary. An appreciation of regional building, particularly of the Mediterranean, has frequently appeared in Le Corbusier's books, principally as examples of integrated social units expressing themselves through form, but only recently has regional building become a primary source of plastic incident. There seems to be no doubt that Le Corbusier's incredible powers of observation are lessening the necessity for invention, and his travels round the world have stockpiled his vocabulary with plastic elements and *objets trouves* of considerable picturesqueness. If folk architecture is to re-vitalise the movement, it will first be necessary to determine what it is that is modern in modern architecture. The scattered openings on the chapel walls may recall de Stijl but a similar expression is also commonplace in the farm buildings of Provence. The influence of popular art is also apparent in the priest's house and the hostel buildings. The external woodwork is painted sky blue and areas of smooth rendering painted over in patterns are decoratively applied to the outside walls; their situation and appearance do not express any formal, structural or aesthetic principle. All the walls of these outbuildings are in concrete, and large stones have been placed in the mix close against the shuttering, so that when the boarding is removed the surface of these stones is exposed.

Since the Bauhaus, the fusion of art and technology has been the lifelong mission of Gropius, and yet it is this aspect which denotes his least achievement. The Dessau building itself presents a series of elevations each of which is biased towards either art or technology. The suggestion that architecture has become so complex that it needs be conceived by a team representing the composite mind may partly account for the ambiguity which is felt with buildings generated in this manner. On the other hand, Maillart, who evolved his æsthetic as the result of inventing theories of reinforcing to exploit the concrete ribbon, achieved in his bridges an integration of technique and expression which has rarely been surpassed. The exaggerated supremacy of 'Art' in European Architecture probably denotes a hesitant attitude towards technology, which itself has possibly been retarded by our derisive attitude towards the myth of progress, the recent belief that true progress lies in charity, welfare, and personal happiness, having replaced the Victorian idea of progress as the invention and perfection of man's tools and equipment.

If the application of technology is of little consequence, nevertheless the appearance of industrial products still has some importance for Le Corbusier, as shown by the handrails to the stairs on the chapel. These handrails, which appear to be cut-offs from an extruded section of rolled steel joist, are in fact specially cast and the top flange is set at an acute angle to the web. The movable louvre is a logical development in resisting intense sunlight and it is surprising to find them above two of the entrances to the chapel; however, a closer inspection reveals that they are 4-inch static concrete fins set at arbitrary angles, suggesting movability.

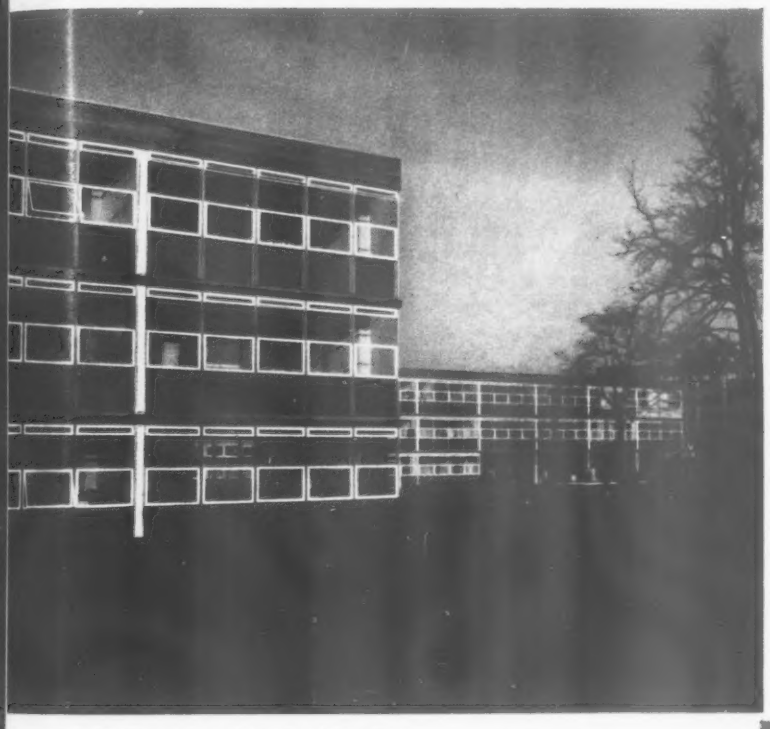
The desire to deride the schematic basis of modern architecture and the ability to turn a design upside down and make it architecture are symptomatic of a state when the vocabulary is not being extended, and a parallel can be drawn with the Mannerist period of the Renaissance. Certainly, the forms which have developed from the rationale and the initial ideology of the modern movement are being mannerized and changed into a conscious imperfectionism.

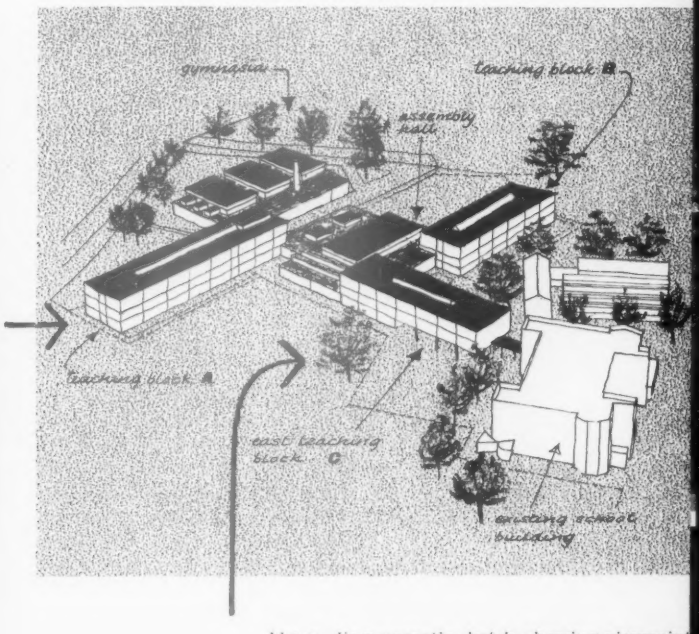
Le Corbusier, proceeding from the general to the particular, has produced a masterpiece of a unique but most personal order.

housecraft
needlecraft
classrooms
first floor (block A)
laboratories
classrooms
first floor (block B)
Portsmouth Road
gymnasium terrace
gymnasium
boiler house
hard informal play area
BLOCK A
classrooms
covered way
parking space
kitchen
BLOCK D
assembly hall
grass play area
hard formal play area
BLOCK C
biology pool
BLOCK B
classrooms and laboratories
hard play area
existing classrooms
covered way
BLOCK E
existing school building
art rooms
classrooms and administration
first floor (block C)
50 0 50 100

SCHOOL AT PUTNEY

ARCHITECTS | **POWELL & MOYA**
Assistant in Charge | **Robert Henley**
Assistants | **Peter Jones and Peter Stewart**





Above, diagrammatic sketch, showing viewpoint of the two photographs on this page

1 and 2, south-west views of classroom blocks, with pre-existing school buildings on the right.

This is an extension to the existing Mayfield girls' school in West Hill, providing 1,620 new places and converting the school into a girls' comprehensive. The old building and temporary buildings are used in conjunction with the new. The existing site on the north side of West Hill was increased to nine acres by taking in adjacent bomb-damaged properties. The extension contained many old trees, most of which have been kept.

The aim has been to keep the design as intimate and small in scale as possible. The teaching blocks have central corridor access with cloakrooms formed in them on ground and first floors. Laboratories and practical rooms are at the end of each block. The open portion of the ground floor of the east teaching block is a covered play area (also forming a link between the old building and the new) and an entrance hall leading to the assembly hall group. The auxiliary halls can be thrown open into the main assembly hall by sliding folding doors and when enlarged can accommodate the whole school. No separate dining rooms were allowed and dining takes place in the assembly hall. Kitchens (next to the assembly hall) and

2

3

3, general view of the school from Portinscale Road, with south teaching block in centre and gymnasium on left. 4, eastern teaching block, showing covered play space beyond (incorporated as ground floor of block). Facing page, 5, one bay of the gymnasium. 6, west front of gymnasium, with terrace in two colours of asphalt.

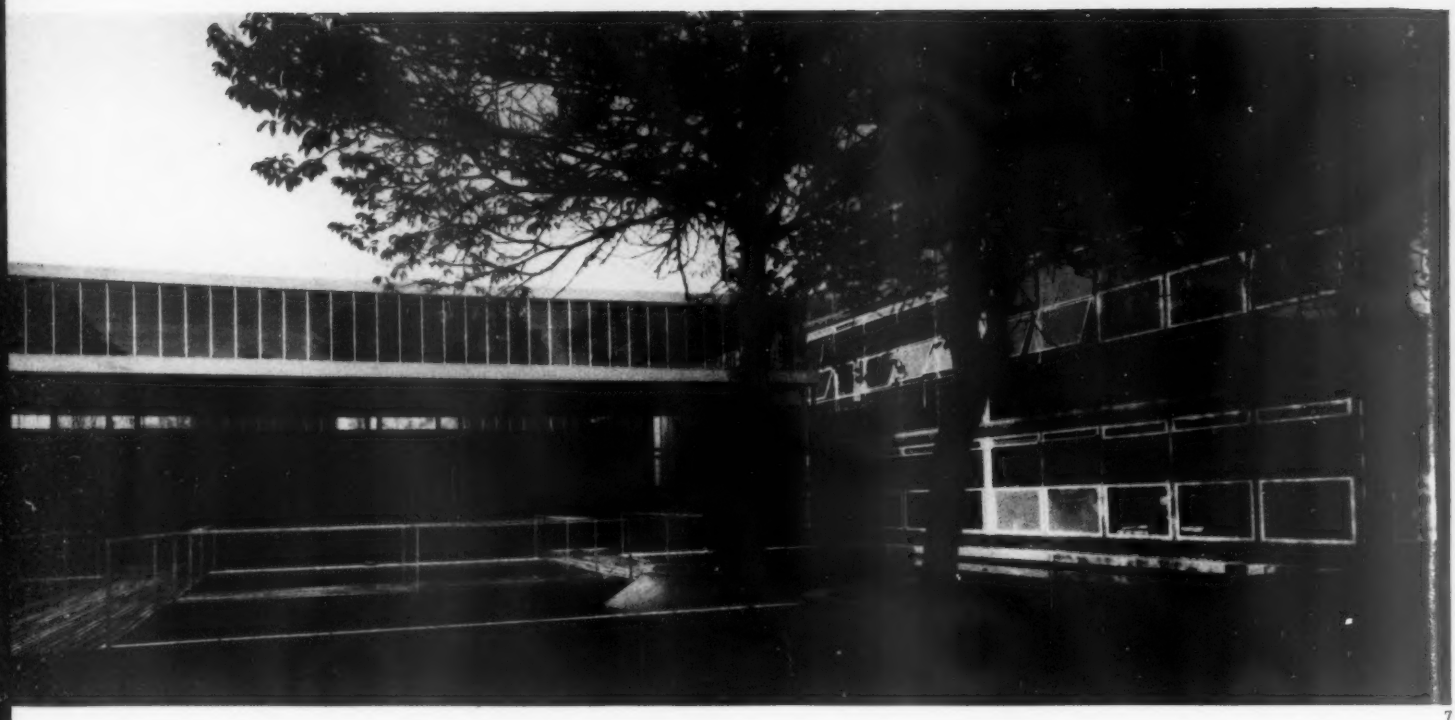
4

boiler-house open on to a service yard remote from the rest of the school.

The new buildings were designed during a steel shortage and it was felt that, with three-storey buildings, brick structural walls would not only save steel but should also provide an economical solution. At the same time, for good day-lighting without excessively high rooms, wide windows were necessary. The main structural walls are therefore the internal brick cross walls (common brickwork 9 in. thick at all floor levels). The floors are prestressed reinforced concrete and the roofs are timber. In the few positions where a solid wall was not practical it has been replaced by an r.c. beam and columns. The crosswalls have white glazed bricks bonded in at the exposed ends: external brickwork is 13½-in. thick with London stock facings. The infilling is glass in oiled hardwood frames with the opening lights in galvanized steel painted white ; below the cills, coloured

5

6

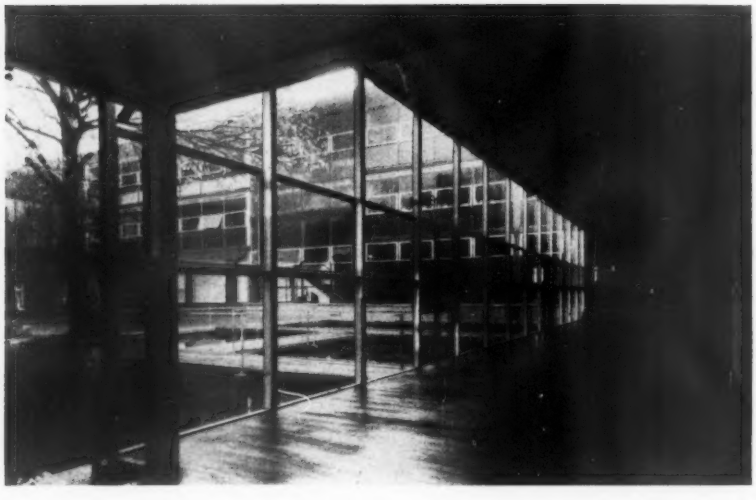


7

7, view of assembly hall across biology pool, with classrooms on right. 8, passage along east side of assembly, linking classrooms. 9, view of abstract mosaic design on main staircase. 10, close-up of the same. 11, the main staircase in the eastern block, looking west. 12, covered play space, looking west from eastern block. 13, inside covered way, showing entrance to play space, left, and hard outside play area, right.

SCHOOL AT PUTNEY

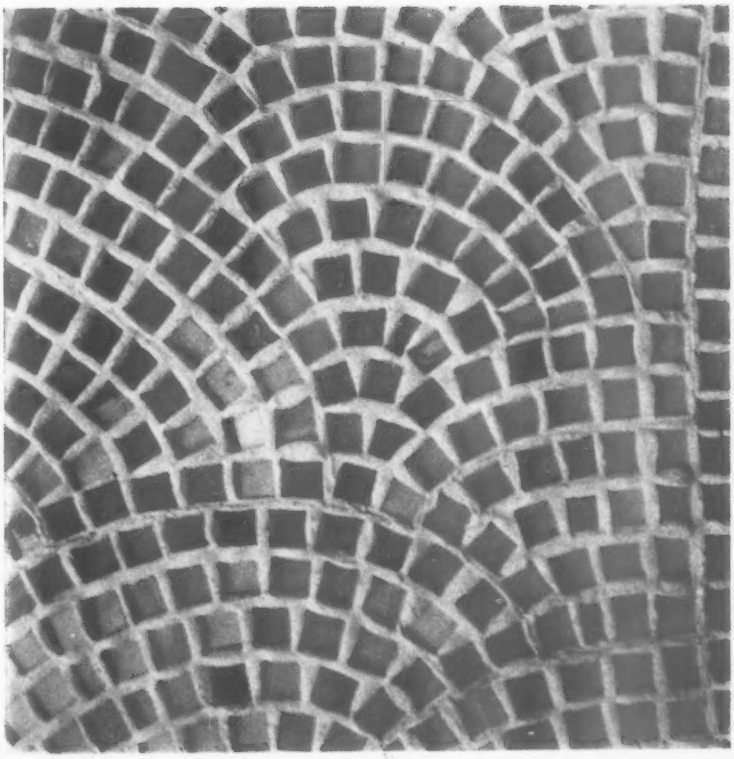
8



stove enamelled asbestos cement sheets are screwed to the back of the hardwood frames, which are glazed with $\frac{1}{4}$ in. roughcast glass ; the internal skin is of 4-in. clinker blocks, plastered. On the ground floor below cill level the frames are replaced by blue brick stable-yard paving slabs laid on edge, bonded and tied back to the inner clinker skin. The flank walls to the main staircase in the eastern block are finished in vitreous mosaic, by Philip Suffolk: one portrays the nine Muses and the other is abstract. The internal colours are predominantly light grey and yellow, with white ceilings ; radiators and exposed pipes are warm dark grey, bright colours being used in small areas only—for example in the fanlights above the doors. Most of the doors are plastic faced and are red at staircase entrances, white for classrooms, black elsewhere: locker fronts in the corridors are dark grey, green and black.

The assembly hall roof is supported on exposed rolled steel columns and consists of two steel space frames like inverted hipped-end pitched roofs. To avoid freestanding columns the side aisles are suspended from the roof frames by steel rods. The space frames are lined with asbestos cement sheets faced with mahogany lapped boarding, varnished. The solid walls are faced with unglazed wall tiles, 4 in. by 4 in., in

9



10

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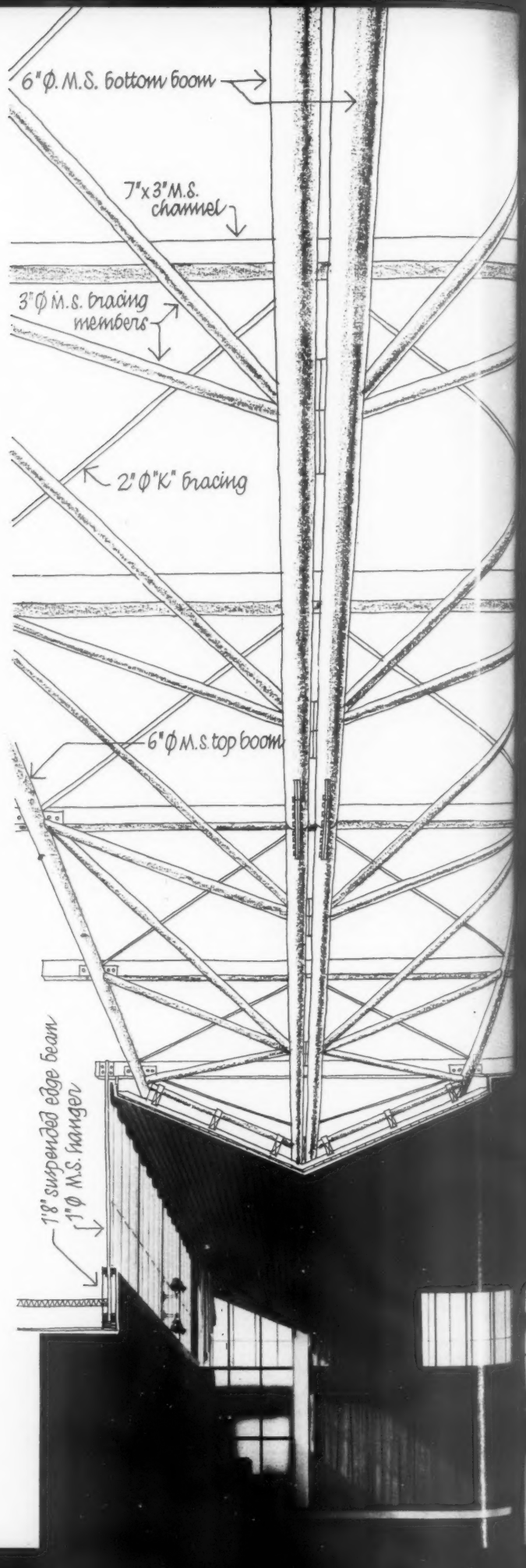
12

13

Right, detail of assembly hall space frames



SCHOOL AT PUTNEY

14

14, south end of assembly hall, with sliding doors folded back against structural columns. 15, main body of hall from the stage, with sliding doors closed. 16, view towards stage from side aisle under suspended roof.

white, grey, pale blue and dark brown: the floor is Missanda hardwood blocks. The hall is heated by embedded floor panels. The kitchen roof is steel and timber supported on load-bearing mullions, the boiler-house roof of prestressed reinforced concrete and the gym. roofs are of timber (hardwood trusses on hardwood posts which are supported on load-bearing brick walls).

The gymnasium has load-bearing brick walls, and hardwood windows with galvanized steel centre-pivoted opening lights: the roof is made up of mahogany trusses carried on hardwood posts which are buttressed by the roofs of the changing rooms, and rest on a reinforced spreader beam on top of the walls. The floor has Gurjun strip flooring on battens.

There is an electric impulse clock system, with clocks in most rooms, and a combined broadcast, public address, class changing and fire alarm system. The tender price was £194 per place, and the net cost, excluding external works, £178 per place: the accommodation per place, including the play areas, is 67 sq. ft.

15

16

AN EDWARDIAN BEQUEST

The Russell Cotes Museum, Bournemouth, described by William Gaunt

'Vignettes painted on a . . . palette—What appears to be a photograph is also a painting': so the catalogue of the Russell Cotes Gallery, Bournemouth, describes exhibit no. 223, above, by J. Bernard. But these words could characterize the whole gallery—paintings pre-occupied with a photographic attitude to their subjects, but those subjects and their settings drawn from Art, not Life, vignettes on a palette. And since Art influences Life, East Cliff Hall, which was built to house the Russell Cotes collection and still does to this day, takes the style of its interiors from the idea of artistic living which was enshrined in its pictures, and in the Notting Hill studio-houses of the artists who set their style. For Sir Merton Russell Cotes, who formed the collection and gave it to the City of Bournemouth, took his taste, both in pictures and interior decoration, from the successful English painters of the years of his late-Victorian affluence. As a result, East Cliff Hall and its contents form a unique surviving record, as William Gaunt points out, of an attitude to Life and Art which has perished almost entirely.

The nature and result of the late nineteenth century patronage of art are vividly illustrated by the Russell-Cotes Art Gallery and Museum at Bournemouth.

Strange to modern eyes as something in a dream is the exterior of the building with its pink-tiled tourelles, its cupolas and swelling glass-enclosed terraces, bowered among rhododendrons and palms on the East Cliff, looking out over the green and purple waters of Poole Bay. Strange, too, is its interior, the vast hall, 1, rich with dark oak, the central fountain of marble let into its parquetry, surrounded by shrubs and statuettes—where blonde goldfish swim across the yellow rays of mosaic beneath the tinkling jet; the staircase with its life-size group 'The Bathers,' 3 (how cunningly the rib of wool, the coy loops and bows on the young woman's costume are counterfeit in marble); the open first-floor gallery where the flash of Victorian gold leads the eye to the serried picture-frames; the rooms around, each with its surprise, its note of fantasy—the trompe l'œil palette so skilfully painted, that a real photograph seems to be stuck on it, the busts by Italian professors of the 1880's, 10, a Pietro Calvi of Milan, a Lot Torelli of Florence (some distributed on the seaward balconies, peer in through the windows with eerie effect, 11), the prodigious array of canvases by Edwin Long, R.A.—one pauses before his 'The Chosen Five,' 4 (five feet by eight, excluding the massive frame), that depicts, in the style of 1885, the beautiful maidens of Crotona, sitting to Zeuxis for his picture of Helen of Troy.

Here in singular completeness is the decor of the late Victorian mansion, the wallpaper with its raised and embossed patterns in crimson and gold, the panels of amber-stained glass painted with birds, the columns of russet marble, 2, the gilded cherubs in relief that sport around the walls, the rococo screens of bedroom and boudoir. Here, also, is the essence of Period in painting and sculpture—more concentrated, perhaps, than in any comparable collection. All this suggests a threefold analysis; of the structure, the scheme of interior decoration and the assemblage of objects of art, but every approach directs us in the first place to the personality and ambitions of Sir Merton Russell-Cotes whose house this was (a present, that is, to Lady Russell-Cotes in 1901—and to Bournemouth from them both in 1908). The analysis, even if it must be extended beyond his lifetime (Sir Merton died in 1921) is substantially that of a patron's dream and some biographical particulars are needed to explain the building that bears his name.

It was in 1876 that he became the proprietor of the Royal Bath Hotel at Bournemouth, a fortunate moment, for the resort was just growing popular. It had arrived late among seaside places. When Queen Victoria was crowned it consisted only of a few fishermen's cottages and a coastguard station; it is an apposite fact that five years before Russell-Cotes took over the hotel on the East Cliff the population of Bournemouth was about 7,000; that five years after it was nearer 17,000—the subsequent leaps and bounds of its progress need no detailing. The hotel owner rose to wealth, local eminence as Mayor and in due course a knighthood, by his own business capacity aided by Bournemouth's swift expansion. To confirm and dignify his status, like others in that prosperous era, he dreamed of a 'palace of art' full, like the palaces of old, of splendid and beautiful things. For many years, while his wealth was mounting, he collected paintings and statuary. Now that so many of the works he brought together seem, to say the least of it, 'old fashioned' it is worth noting that he was contemporary in his tastes and in this he was fairly typical of the new race of patrons. Unlike the connoisseur of the previous century, who would balance the old master with the new, cautiously adding a Wilson to a Claude, a Gainsborough to a Gaspar Poussin, he favoured strongly and almost exclusively the work of living men.

There was a new race of artists (as wealthy as their patrons) catering sympathetically for them. Not relying on dealer or adviser, backing their own fancy, Russell-Cotes bought the pictures that looked opulent and grand, like the huge 'Jephtha's Vow' (1885), 5, by his favourite, Edwin Long; or had an amusing story to tell, 'Tick-Tack,' (1881), 6, by Briton Riviere—a puppy listening (note the subtlety of the title) to his master's ancient watch; or contained a sentiment to muse on—'One More Day drops into the Shadowy Gulf of Bygone Things, (1875) by B. W. Leader. He had no prudish objections to the figure, though he did ask that the too-copious breasts of Jezebel in Byam Shaw's picture of 1896, 8, should be covered by a jacket, but Venus by E. Matthew Hale (1883) was allowed to sit more or less naked (on a golden throne), 9.

Further adventures in collecting depended much on personal association. His taste for Victorian-Italian sculpture may be traced to his visits to Italy (he travelled a good deal). A visit to Japan in 1885 with Lady Russell-Cotes accounts for a diversity of bamboo objects, netsukes and lacquer, preserved in what is now known as The Mikado's Room, 13. An admiration for Sir Henry Irving, who stayed at the Royal Bath, inspired the 'Irving Collection,' 12, including the pistols he used as Dubose in 'The Lyons Mail' and the ancient Roman skull on which he meditated as Hamlet.

For a time the pictures and

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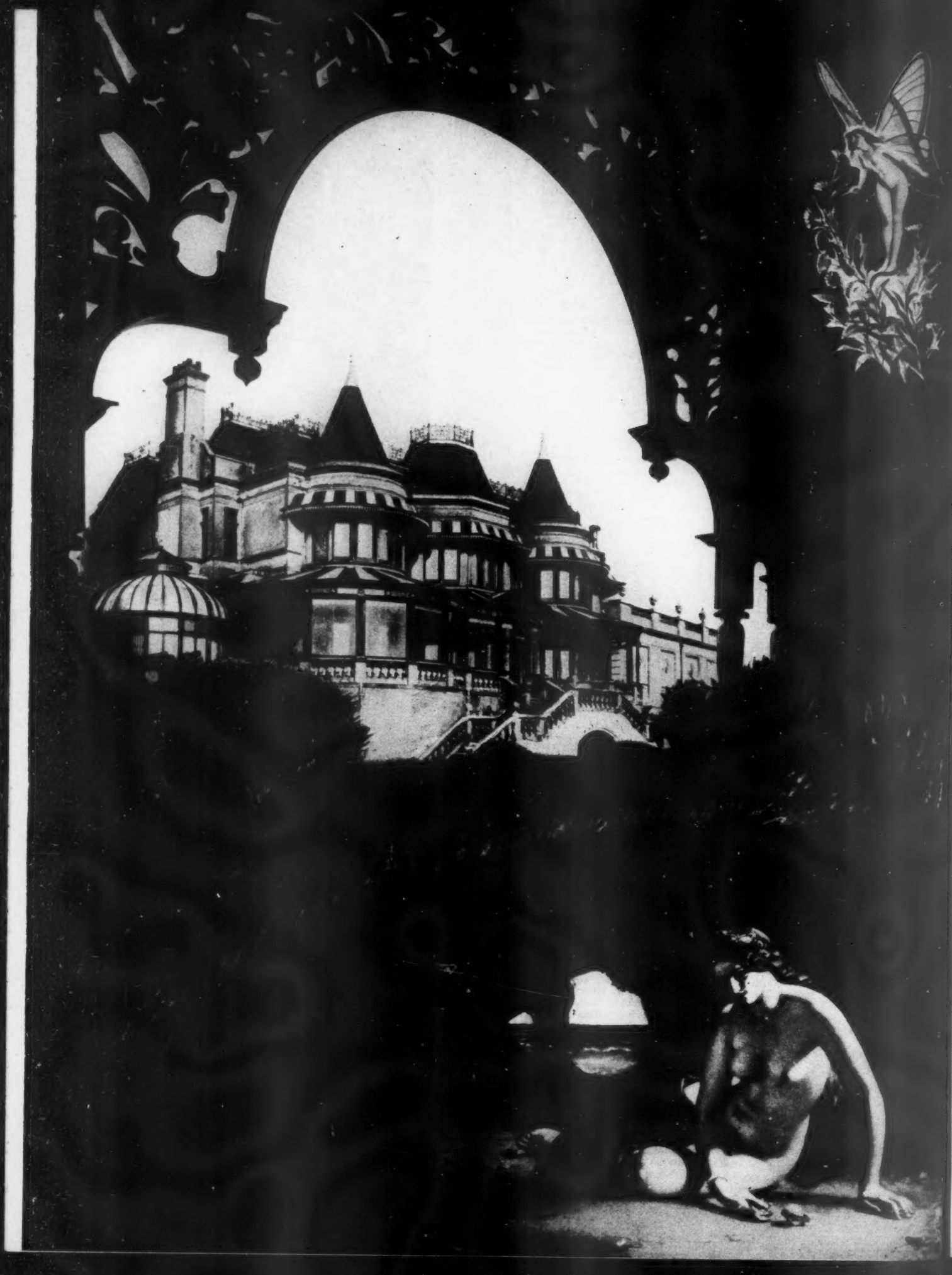
1, the entrance hall to the Russell-Cotes Museum (East Cliff Hall, Bournemouth) with marble fountain, shrubs and statuettes. 2, one of the russet marble columns in the house, with frescoed vaulting and embossed ceiling. 3, life-size group, 'The Bathers,' (artist unknown). 4, 'The Chosen Five,' by Edwin Long, R.A., which depicts the maidens of Crotona sitting to Zeuxis for his portrait of Helen of Troy.



sculpture were widely distributed, moving, mainly about the Midlands, as the 'Russell-Cotes Loan Collection,' yet they demanded a worthy and permanent home. Sir Merton had in mind a house, close to the hotel but surpassing it in magnificence. Built in the closing years of the nineteenth century this was East Cliff Hall, now forming the main part of the Gallery and Museum. The visitor is still likely to be impressed by the dramatic nature of propinquity and contrast as between hotel and mansion. A plain, white, solid building of that mid-Victorian kind sometimes called 'Georgian type', the Royal Bath Hotel seems as it were to have given birth to a vision, the Museum, a few hundred yards away, a vision that evades architectural category. Ought it to have had a local character? There was nothing to conform to. Bournemouth, unlike Brighton, had no Regency buildings which might or might not set a style—and it was a necessary premise that the palace of art should be distinct from the hotel.

What resulted may be called the projection of a state of mind. There was an architect, J. Fogerty, A.R.I.B.A. (his firm was local but no longer exists), yet, as so often in the late Victorian age, the dreamer stood at the architect's elbow, urging his wish for the surroundings of the Tudor noble, the Italian prince, the laird in his ancestral castle. It was Sir Merton Russell-Cotes who aimed, as he tells us in his privately printed autobiography, at a combination 'of Renaissance, Italian and Old Scottish Baronial Styles.' The interior of the mansion bore a likeness to others somewhat earlier than its date. The popular Victorian painters had set an example in their own luxurious houses that wealthy middle-class patrons confidently followed. They, if anyone (it was reasonable to argue) should know what a palace of art ought to look like: and East Cliff Hall among other homes of the wealthy paid its respects to their judgment. The Parthenon frieze, repeated in Lord Leighton's studio, had its further replica on Russell-Cotes's staircase. In the artists' homes were many fountains: those of Millais, Leighton and Alma Tadema were famous and it was only fitting that the palace of art at Bournemouth should have its fountain also. In his classical villa in Grove End Road, Alma Tadema inscribed maxims of art over the doorways and it was perhaps in admiring imitation that Russell-Cotes caused to be painted in Old English letters maxims of his own. An Italian decorator of his own choice covered the ceilings with paintings that had the more up-to-

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Seen in capriccio by Kenneth Browne, through the rich tracery of one of its screens, East Cliff Hall, Bournemouth, with its Italo-Tudor-Baronial turrets, exhibits the same blend of the material and the wishful as the pictures it houses. Collected by Sir Merton Russell-Cotes, who built the hall, they range from the aethereal realism of Falero's 'Butterfly', above, to the fleshy fantasy of W. E. Frost's 'Sea Cave', below.

5, *'Jephtha's Vow'* (1885) *by Edwin Long.* 6, *'Tick-Tack,' a puppy listening to his master's watch* (1881), *by Briton Riviere.* 7, *'The Siren' by Charles Landelle.* 8, *'Jezebel'* (1896) *by Byam Shaw.* 9, *'Psyche kneeling before the throne of Venus'* (1883) *by E. Matthew Hale.*

10, one of the galleries on the seaward side of the house, containing Italian busts, mainly of the 1880's; *the same can be seen,* 11, *from the inner galleries.* 12, *the Henry Irving Room, the result of Sir M. Russell-Cotes' great admiration for the actor.* 13, *the Mikado's Room, containing the collection brought back by Sir M. and Lady Russell-Cotes from their tour of Japan in* 1885.

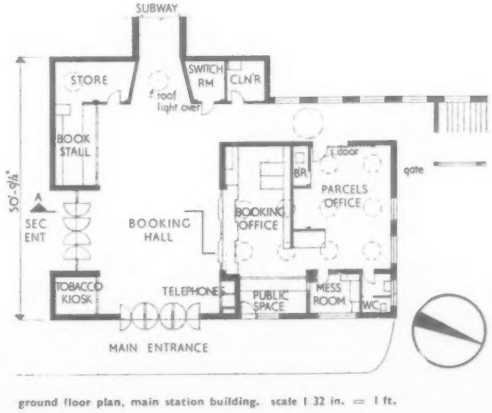
date flavour of the café-restaurant of the 'nineties.

East Cliff Hall made a munificent gift to Bournemouth, with the addition of four top-lit galleries for pictures (opened in 1919), as the Russell-Cotes Art Gallery and Museum, though the story of its growth was then by no means finished. As a repository of the Victorian 'rich man's art' in its domestic setting, and, for a subsequent age, an historic and social 'document,' it was complete as Sir Merton left it. On the other hand, the annexe of 1919 foreshadowed the municipal gallery and an endowment fund provided the means of indefinite extension. What sort of additions were, and could be, made remains to be considered.

The basic collection, so much bound up with the personal taste and experience of its owner, was not very easy to build on. Dissecting it impartially one finds no central core of what we could all agree are masterpieces. While almost exclusively composed of nineteenth century works, it by no means fully represents the nineteenth century. There are virtually no Pre-Raphaelites or only belated by-products that give little idea of Pre-Raphaelite aims. A sea-picture, for instance, by John Brett, reveals none of the quality of his work in the fifties. A painting by Arthur Hughes, of 1888 (reproduced in the Souvenir of 1924 though disappearing from the catalogue later), seems sadly different from his inspired early productions. In spite of a large Albert Moore, the leading classicists are scantily represented. Foreign works were never excluded and there is a hint of Barbizon, of Corot and Diaz in the original catalogue, but at no time a trace of a French Impressionist. 'Art is to the eye what music is to the ear' was one of the maxims inscribed (and still faintly visible though it has been painted out) on one of the walls: but this sentiment did not prompt the purchase of a Whistler symphony or nocturne. The trustees have tried various lines of development. One is to add nineteenth century pictures and as recently as 1932 more Edwin Longs were
10 acquired. A handsome recent
11 purchase, Rossetti's 'Venus Verticordia,' may be said to fill a gap, even if it seems a little out of its element. Another plan is to add works as near to the original collection in style or spirit as our own century affords—which is of more debatable value and raises a host of new questions. It is fair to say the original standard was not æsthetically high. To make it a present-day canon logically involves the acquisition of the æsthetically imperfect. One is compelled to think of the possibilities of confusion among lay visitors, seeking for education in art as to what is good and what is not; confusion also as to what modern art really is; and what an ideal municipal gallery should be (if this is, as its endowment and extensions suggest, a municipal gallery in embryo).

Here, of course, are problems that have beset all our late nineteenth century galleries including the Tate Gallery (another Victorian patron's dream) which has met them by its prolonged series of excisions and transformations designed to give a better proportioned view of British art as a whole. Yet the Russell-Cotes Gallery is a special case. It began as a house. It is instructive to see the close connection between the
12 interior and a particular kind of
13 painting and sculpture. To alter the collection materially would be to lose the character of a period piece. It is a 'museum' (ambiguous word) only in a very individual sense, though a 'Geological Terrace' now adds its interesting monoliths of lias, diorite and Kentish rag, to such 'museum' specimens as the netsukes of the Mikado Room and the pistols of Dubosc. The essence of its pictorial art is that of the 'eighties, even if the old pictorial vein continues to 'Anno Domini, 1940, as I see it,' a painting by William Turner in which a fool in motley, sitting on a table amid guttering candles, burns pound notes. It is architecturally, and as a collection for anyone with a period sense, a queerly fascinating creation of an affluent age and person, and his dream of splendour.

1, *pedestrian way to the main building from the south.*



ground floor plan, main station building. scale 1.32 in. = 1 ft.

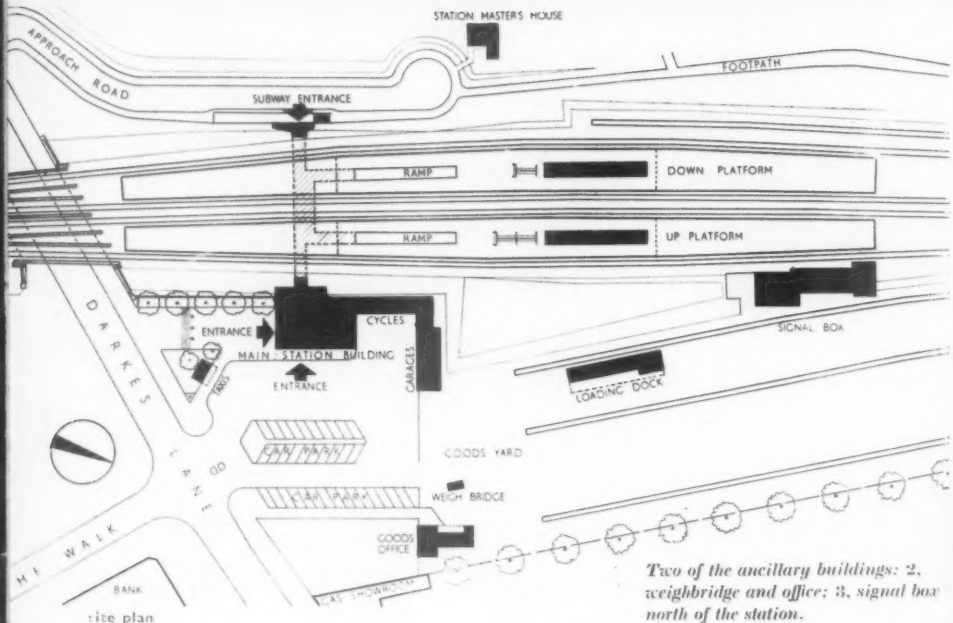
STATION AT POTTERS BAR, MIDDLESEX

CHIEF ARCHITECT, B. R. EASTERN REGION: H. H. POWELL

ARCHITECT-IN-CHARGE, JAMES WYATT

The station is a complete reconstruction caused by widening the main Eastern Region line from London to the North. From the architect's point of view, this entailed providing signal box, loading deck, weighbridge shelter, goods offices, main station building, finishes to subways and ramp, platform buildings and station-master's house; the canopies and platforms themselves were not under the architect's control. Potters Bar has typical suburban traffic, mostly London-bound season-ticket holders; for this reason there is more public accommodation on the 'up' platform and direct access to the platforms through the booking office is arranged so that it is not impeded by ticket-buying queues. The ticket control is in the subway between the ramps to the platforms.

Station at Potters Bar, Middlesex



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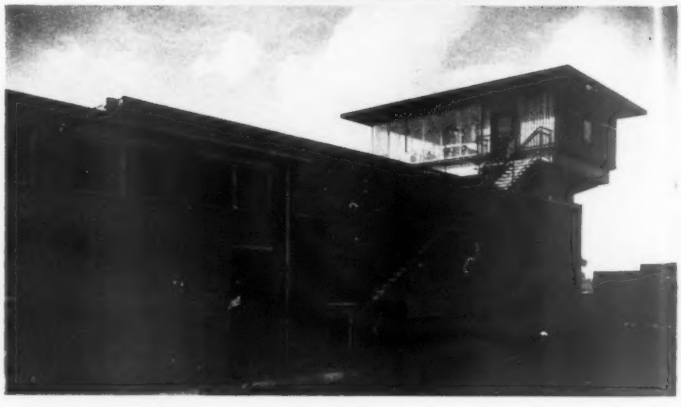
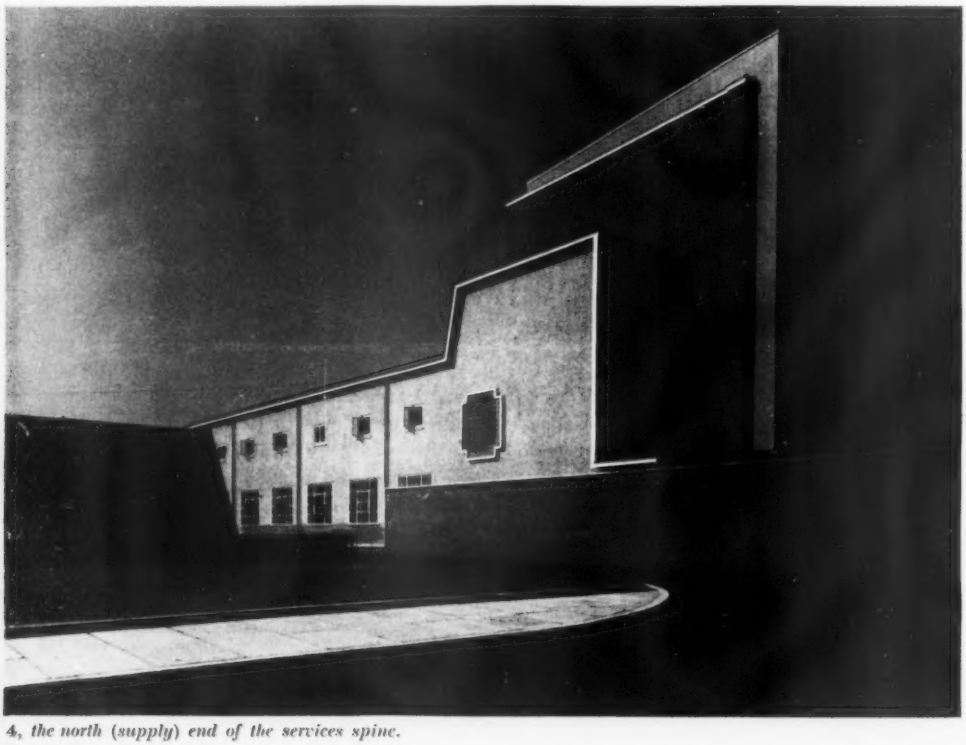


3

Two of the ancillary buildings: 2, weighbridge and office; 3, signal box north of the station.

The main station building is constructed with in-situ reinforced concrete beams, slabs and columns, with load bearing external brick walls. The platform buildings are constructed with unpierced brick panels forming piers, linked by braced light steel angles supported on tubular columns behind the windows, with a light timber roof. The signal box is load-bearing brick, with the signal room independently supported on a reinforced concrete platform standing on four reinforced concrete columns, and consisting of a light steel roof covered with steel decking supported on 2-inch solid steel columns.

In the booking hall, blue glazed wall-tiles have been used up to the clerestory level, between the openings: the suspended ceiling is perforated acoustic boarding to reduce the noise level resulting from the hard finishes elsewhere.



4, the north (supply) end of the services spine.

HOSPITAL AT ALEXANDRIA, DUMBARTONSHIRE

ARCHITECT: J. L. GLEAVE

CHIEF ASSISTANT: T. R. SCOTT

This is a 150-bed general hospital on the west side of the valley separating Loch Lomond and the Firth of Clyde; the first new hospital to be finished in Britain since the war. Two principles controlled the design: a maximum height of three storeys, to use the shelter afforded by hills west and south; and the need for flexibility. The result is a central permanent spine for communication and services, with accommodation groups attached to it that are capable of being extended both horizontally and up to three storeys.

The spine contains a basement 'soiled duct' which takes all refuse; the ground floor is used for general communication, and the first floor for food supply only. The spine and the links connecting it to the standard units are load

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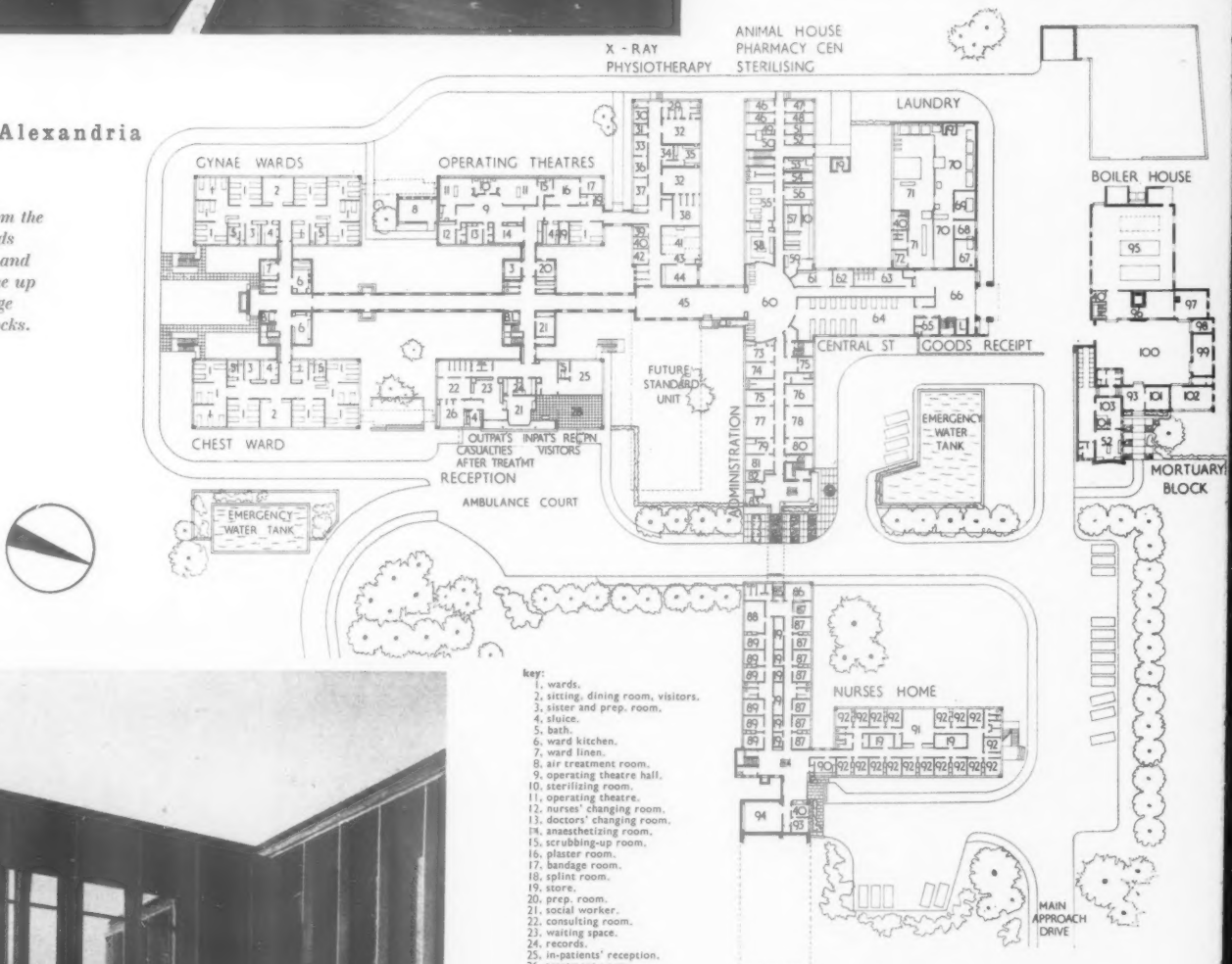
bearing brickwork rough-cast. In acting as a distribution channel it runs southward from the tower which contains the tanks and lift motors, and 'points' towards the wards: it is faced with golden brown brick and fluted asbestos cement sheets. The semi-circular central supplies hall is on the ground floor underneath the tower, connecting as many service departments as possible.

The ward units themselves are a standard size of 100 feet by 40 feet, steel framed on a 40-inch grid with reinforced concrete floors and roofs, and faced with five types of infilling panels using glazing and cedar boarding. Each ward unit houses 50 patients, but in an emergency 280 beds can be accommodated altogether. Most of the ancillary rooms are in the link block, and the wards are largely subdivided by glazed screens.

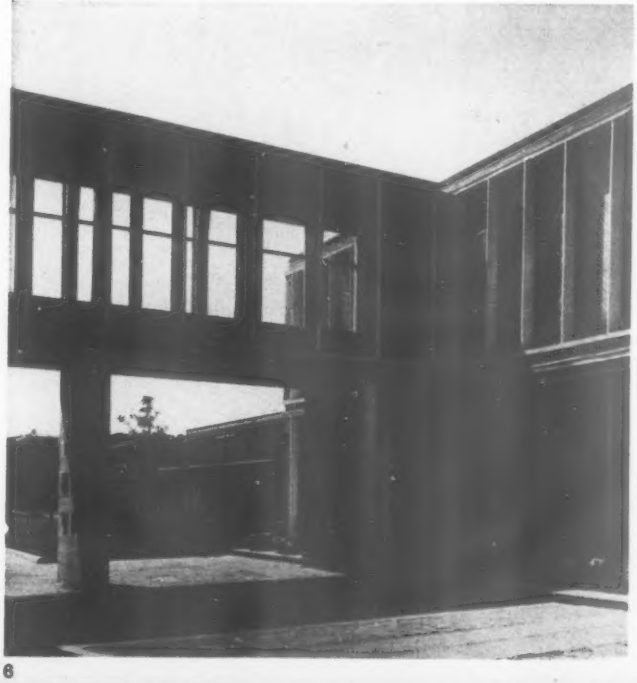
Radiant panels are used to heat the operating rooms to minimize the risk of dust-carrying convection currents: the general heating is by hot water, but steam boilers are installed because of the need for sterilizing equipment.

Hospital at Alexandria

5, main entrance from the south, looking towards administration unit and nurses' home. 6, close up of the first floor bridge between these two blocks.

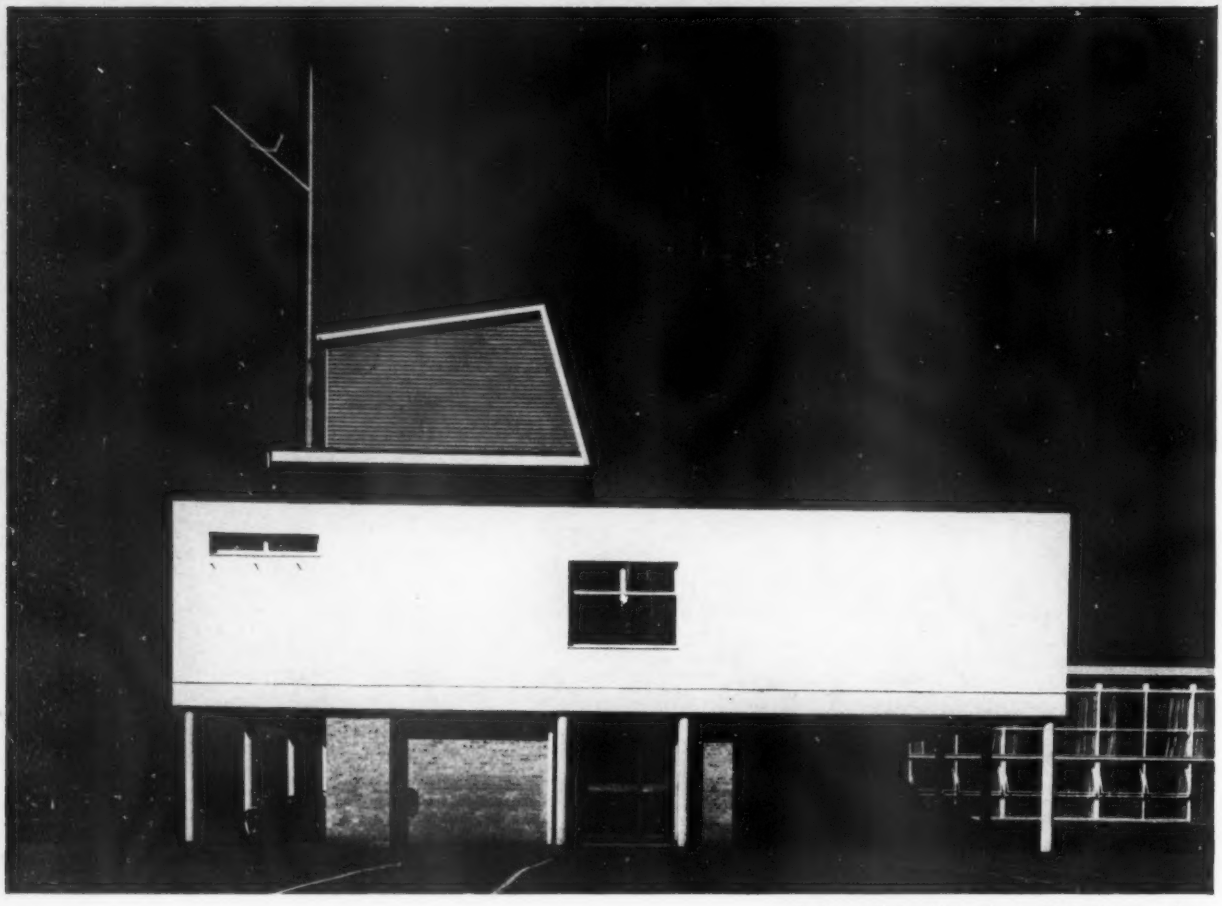


ground floor plan scale 1/96 in. = 1 ft.



6

key:
1. wards.
2. sitting, dining room, visitors.
3. sister and prep. room.
4. sluice.
5. bath.
6. ward kitchen.
7. ward linen.
8. air treatment room.
9. operating theatre hall.
10. sterilizing room.
11. operating theatre.
12. nurses' changing room.
13. doctors' changing room.
14. anaesthetizing room.
15. scrubbing-up room.
16. plaster room.
17. bandage room.
18. splint room.
19. store.
20. prep. room.
21. social worker.
22. consulting room.
23. waiting space.
24. records.
25. in-patients' reception.
26. treatment room.
27. reception office.
28. visitors' room.
29. cubicles.
30. radiographer.
31. film store.
32. X-ray.
33. viewing and reporting.
34. wet viewing.
35. developing room.
36. radiologist.
37. emergency X-ray.
38. patients' waiting room.
39. wax room.
40. office.
41. treatment cubicles.
42. sunlight room.
43. physiotherapy.
44. gymnasium.
45. lobby.
46. infected animals.
47. food store.
48. quarantine.
49. cage disinfecting.
50. cage washing.
51. normal animal house.
52. post-mortem room.
53. cylinder store.
54. spirit store.
55. central sterilizing room.
56. bulk store.
57. drug store.
58. central syringe.
59. pharmacy.
60. central supply.
61. hospital linen.
62. sewing room.
63. women staff cloaks.
64. central stores.
65. male staff cloaks.
66. goods receipt hall.
67. infected work.
68. disinfected work.
69. foul wash house.
70. sorting and washing bay.
71. finishing and packing.
72. staff dispatch room.
73. assistant matron.
74. matron.
75. typists.
76. secretary.
77. accounts department.
78. board room, audit, waiting.
79. accountant.
80. medical superintendent.
81. wages department.
82. cashier.
83. porter.
84. entrance hall.
85. kitchen.
86. domestic staff sitting room.
87. domestic.
88. sisters' sitting room.
89. sisters' bedroom.
90. kitchen laundry.
91. nurses' sitting room.
92. nurses' bedroom.
93. visitors.
94. games room.
95. boiler house.
96. plant room.
97. stand-by diesel.
98. hospital switch room.
99. transformer.
100. service yard.
101. chapel.
102. workshop.
103. mortuary.
104. chill room.



7, the south teaching wing, with tank room above.

SCHOOL AT HERNE BAY, KENT

ARCHITECTS: LYONS, ISRAEL AND ELLIS

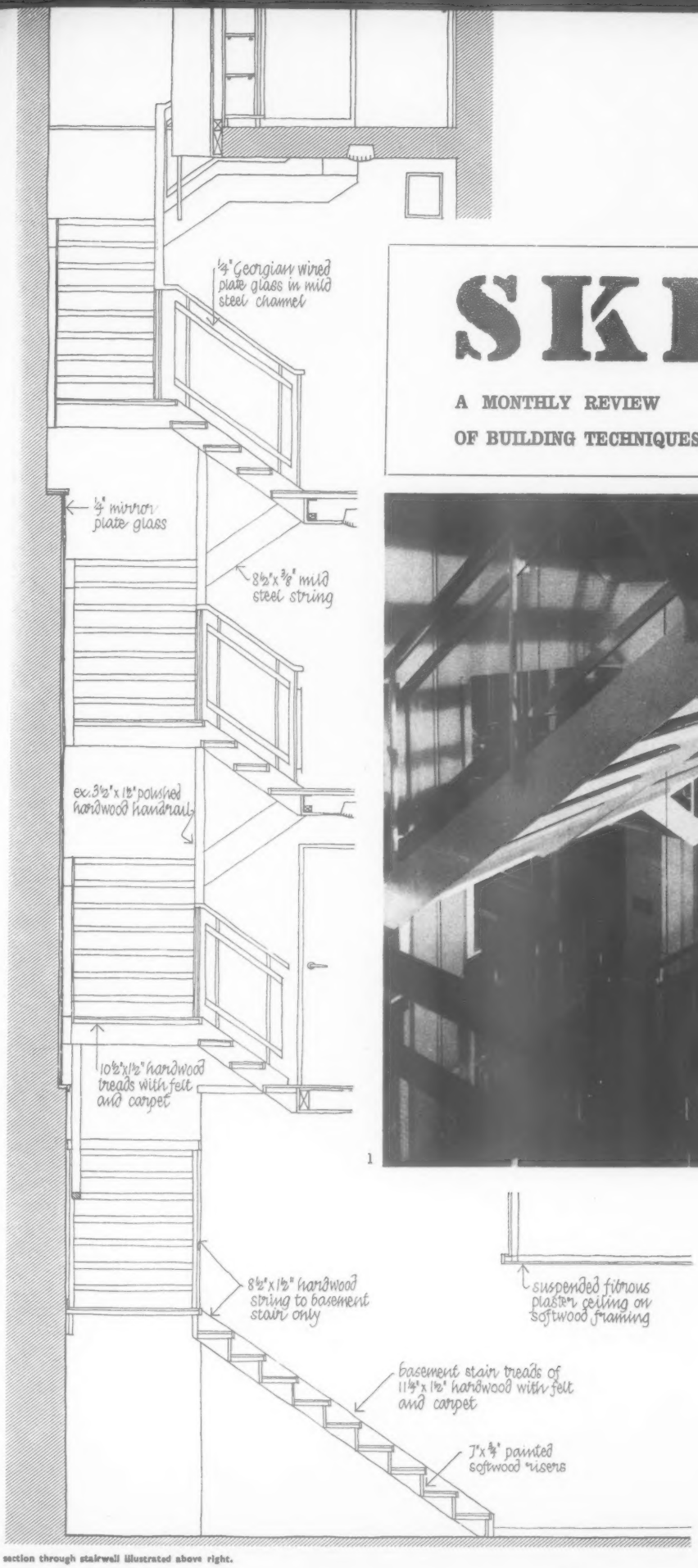
A three form entry mixed county secondary school in Bullockstone Road, on a gentle sloping site giving southward views over the Isle of Thanet. The spine of the building runs N.W.–S.E., with two classroom arms intersecting it and enclosing the assembly hall: a gallery in the latter joins the arms at first floor level. The whole building was intended to be of frame construction; an acute steel shortage made this impossible and the ground floor is a combination of load bearing brick (ancillary buildings and assembly hall) and crosswall-and-pier and reinforced concrete frame (classroom blocks). The outside walls of the first floor are built up from teak posts, tied longitudinally by teak beams bolted to 6-inch reinforced concrete stub columns which carry the roof beams. The clients asked that wood wool slabs (6 feet long) should be used wherever possible and this suggested a column-to-column grid of 12 feet. The rendered brick panel on the south elevation is painted deep blue: panels in the first floor frames are black, grey-green and yellow; steelwork inside the assembly hall is painted white.

ground floor plan scale 1/48 = 1 ft.

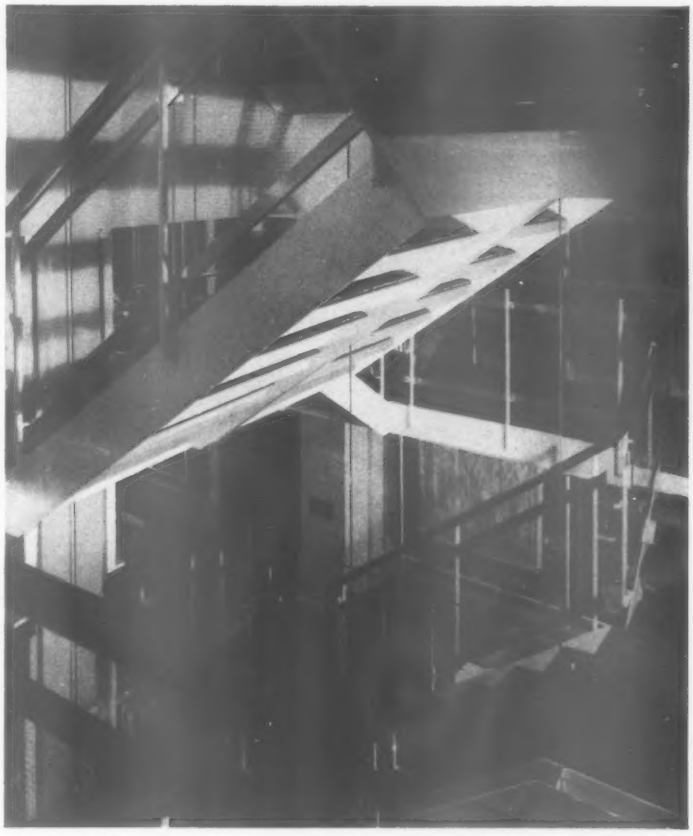
SKILL

A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design revie
3 techniques
4 the industry


¼" Georgian wired plate glass in mild steel channel
¼" mirror plate glass
8½"x ⅜" mild steel string
ex. 3½"x 1½" polished hardwood handrail
10½"x1½" hardwood treads with felt and carpet
8½"x1½" hardwood string to basement stair only
suspended fibrous plaster ceiling on softwood framing
basement stair treads of 11⅛"x 1½" hardwood with felt and carpet
7"x ⅝" painted softwood risers

section through stairwell illustrated above right.



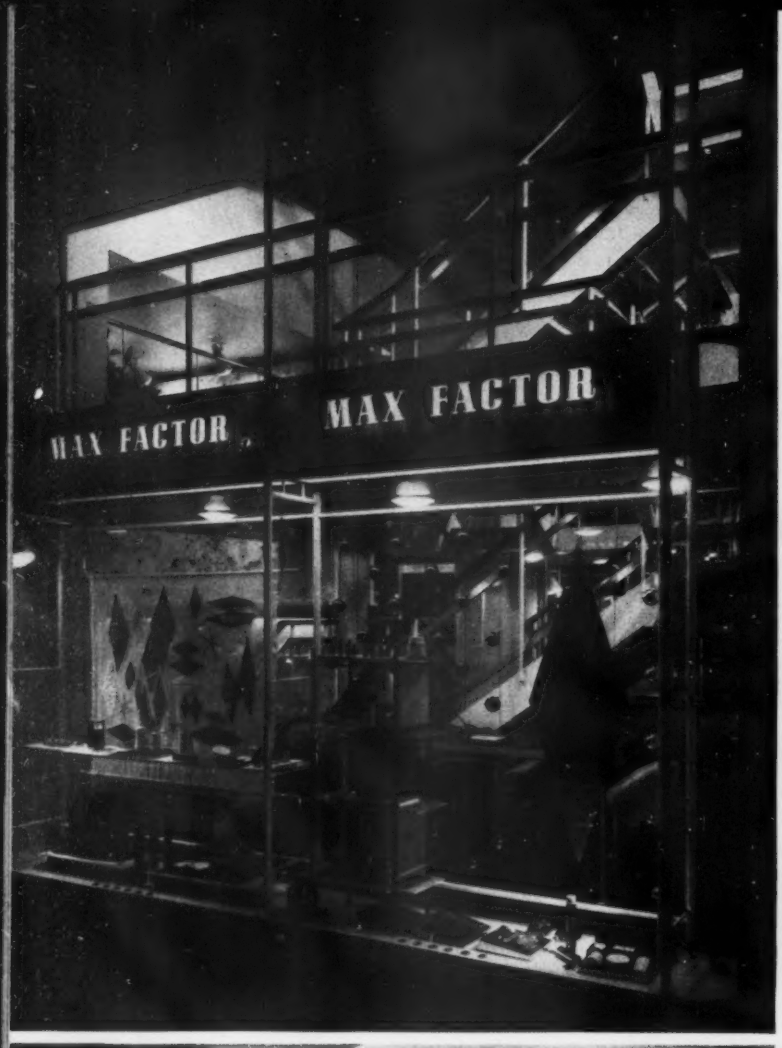
1

1 INTERIORS

BEAUTY SALON OFF BOND STREET, W.1

Architects: Gordon and Ursula Bowyer

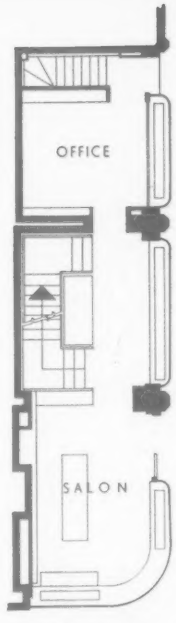
These premises for Max Factor are on the corner of the Royal Arcade, at the Bond Street end. Space is severely limited at ground level, but the first floor extends over the Arcade and the basement under it. At street level are a salon for the sale of cosmetics and making of appointments, a


MAX FACTOR
MAX FACTOR

MAX FACTOR
HOLLYWOOD

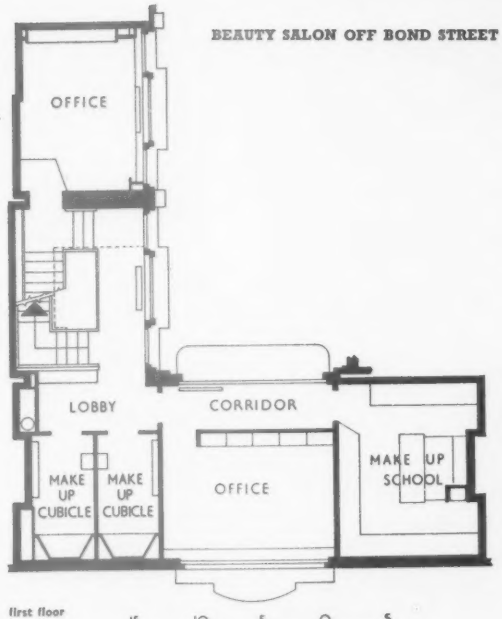
MAX FACTOR
HOLLYWOOD

small private office and a service entrance to the basement; on the first floor are two executive offices, an 'instruction room' and two make-up cubicles, on the second a small office and theatrical make-up cubicle, and in the basement a store-room, rest and powder rooms for customers and cloak-rooms for staff. Two existing staircases were replaced by one with a new mezzanine landing. In the salon the window-backs were removed and the window beds narrowed, as all displayed objects are small and more space could thus be gained inside. The panel facing the entrance, with a display recess between its two sections, conceals air-conditioning trunking and heating pipes. The rear wall is completely mirrored; the new stair in front of it consists of carpet-covered hardwood treads and welded steel strings painted white, with an ebonized handrail and a wired glass balustrade. A flower-box on the mezzanine has sycamore strip facings. The ceiling is lemon yellow. The office behind is in the same general colours; a mirror covers one wall with, under it, a bronze lighting trough directed at the ceiling. On the first floor over the Arcade is an office with large semi-circular net-curtained windows looking on to Bond Street and down the Arcade, One side is treated as a corridor but is part of the office in conception, with a storage fitting division up to door height and glazing above. Each part has the same floral wallpaper on the outer walls, and the ceiling sloping down from the windows to the glazed screen to contain the air-conditioning ducts above. The 'instruction room' adjoins this office and has round the perimeter a continuous mirror and plastic-covered shelf with drawers underneath. Recessed into the ceiling are six pairs of fluorescent tubes masked by opal perspex, which can give a variety of lighting effects; pigmy lamps in the side mirrors add sparkle. The rest-room in the basement has a fibrous plaster ceiling vaulted to follow the lines of existing brick arches; the free-standing structural pier is clad with mirrors and vertical mahogany strips.

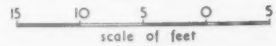


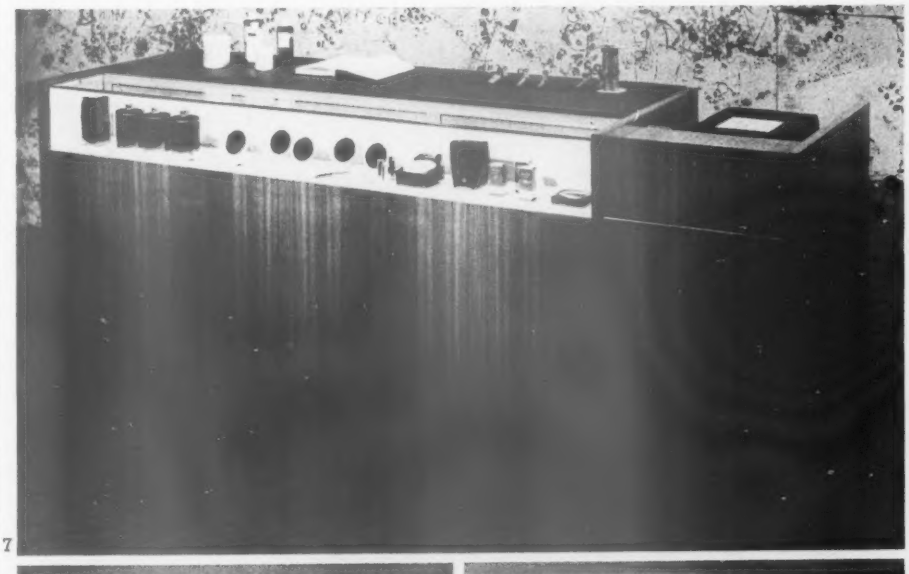
ground floor

BEAUTY SALON OFF BOND STREET W.1



first floor

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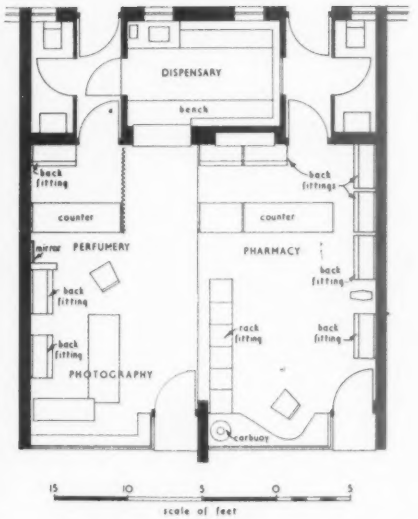
9

Opposite Royal Arcade. 3, top right, stairs and mezzanine from ground floor salon. 4, bottom left, the rest room in the basement: mahogany strips on right clad an existing free standing pier. 5, centre right, sign in Bond Street; 6, below right, centre panel to entrance doors: the lettering here and throughout the showrooms was designed by Kenneth Grange. On this page, 7, counter in the salon; polished elm veneer with grey-blue leather top. 8, office at rear of building on first floor: pink ceiling, grey carpet, black and white matting paper in end wall. 9, the other office on the first floor, on the bridge over the arcade entrance.

CHEMIST'S SHOP IN HEMEL HEMPSTEAD

Architect: Maurice Hardstaff

The shop in the town centre of Hemel Hempstead originally consisted of two independent units of 12 feet frontage by 20 feet depth with lavatories and stores behind. The shop floors of the two units



have a difference in level of 6 inches. The dividing wall was removed completely to make a single shop with two entrances and a room at the rear large enough to form a dispensary. One set of lavatories was removed to make a storeroom.The problem of the 6-inch difference in floor level was limited to a 3-foot wide passageway between an open display rack and a counter, which, to invite attention to the step, is here brightly coloured. To achieve an open type of display, with a minimum of

13

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10, view from entrance of pharmacy looking through central rack fitting towards perfumery counter. There are five display boxes in the rack: grey outside, red, yellow, blue, white and green inside. 11, *3-foot and 6-foot components making up pharmacy counter.* 12, *one of the back fittings: metalwork sprayed black, wood painted grey with tops in polished Honduras mahogany veneer.* 13, *window fitting for photographic department.*

visual barriers, metal supports in conjunction with timber display and storage units were used, which in the limited space available leave a high proportion of floor space available to customers. The fittings are of six kinds: display counters; a storage counter; high-back counter storage and display units; a display rack; a hanging display and storage unit, and a window display unit. The shelving in all the units is adjustable, and drawers are set on rollers for ease of manipulation, and the boxes and shelves in the central rack fitting can be removed or adjusted as desired. The door furniture is of anodized aluminium. The Italian chairs are made of woven cane on metal frames.

14, *exterior of chemists' shop.*

The colours of the items displayed demanded a neutral background in most cases and two shades of grey have been used for the inside and outside of fittings. A long counter and one display box are red; and the other display boxes white, yellow, green and blue. The metal frames are throughout cellulosed black. The counter and shelving tops have wax polished Honduras mahogany veneer. The lighting is by simple ceiling units and reflector lamps in swivel units. The heating is by three portable convector units.

15

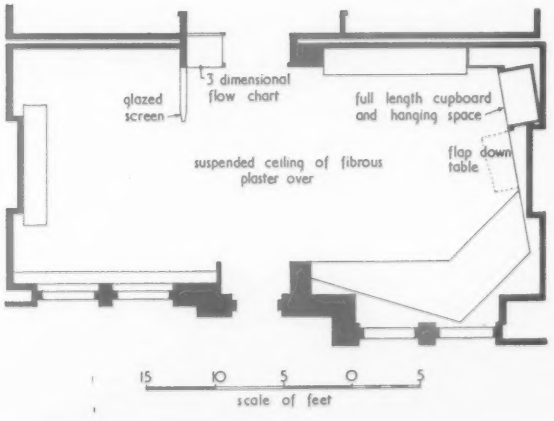
16

15, *the industrial display panel seen from the entrance, consisting of alternate vertical photographs and inset sloping panels in a surround of veneered French poplar.* 16, *fabric display on pivoted metal frames: glazed screen on right.*

SHOWROOM IN LONDON, W.1

Designer: Hulme Chadwick

Two rooms have been thrown into one for the ICI Terylene showroom at 144, Park Lane, London. The structural wall dividing the two front rooms of the first floor was removed and the deep beam spanning the opening was masked by a lowered 'canopy' ceiling with inset lights. This also masks the light source illuminating the platform display. The wall at the end of the room left of the entrance has been placed at a slight angle to the outer wall of the house enabling a deep cupboard with full-length hanging space to fit behind it. Garments are stored in a chest of drawers in the showroom itself and displayed immediately above. At the other end of the room, against a lemon-coloured

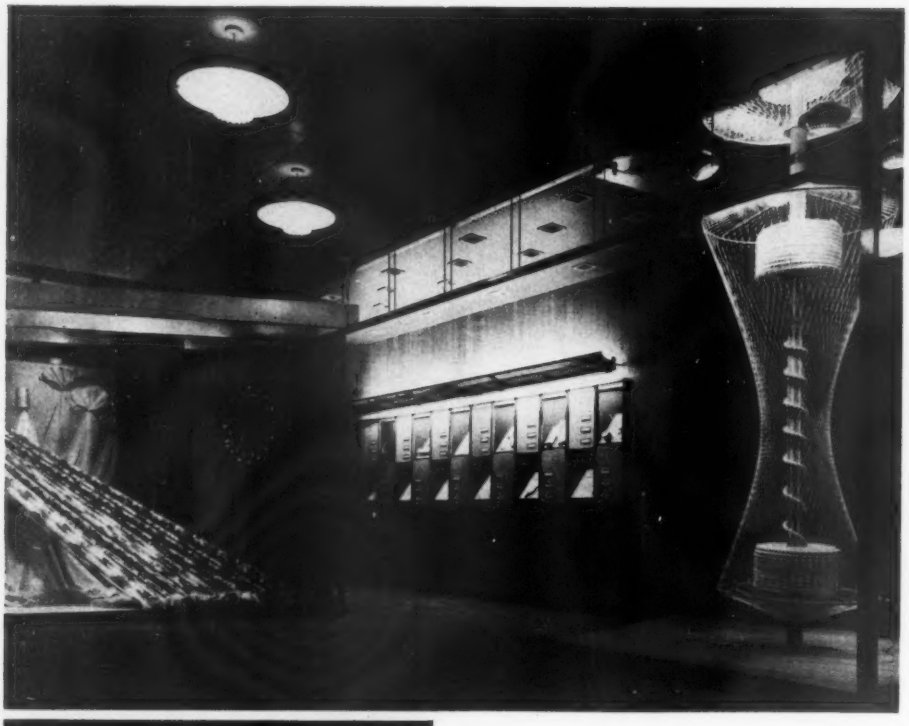


17, wall between entrance and fabric display. 18, *platform display on right: garment display above chest of drawers behind plant on left.*

wall, fabrics are shown on pivoted metal frames; a light canopy over allows for tungsten or colour-matching fluorescent lighting. Industrial exhibits are carried in inset sloping panels lit from a glass soffit above, framed up with alternate vertical panels carrying photographs.

17

18



19

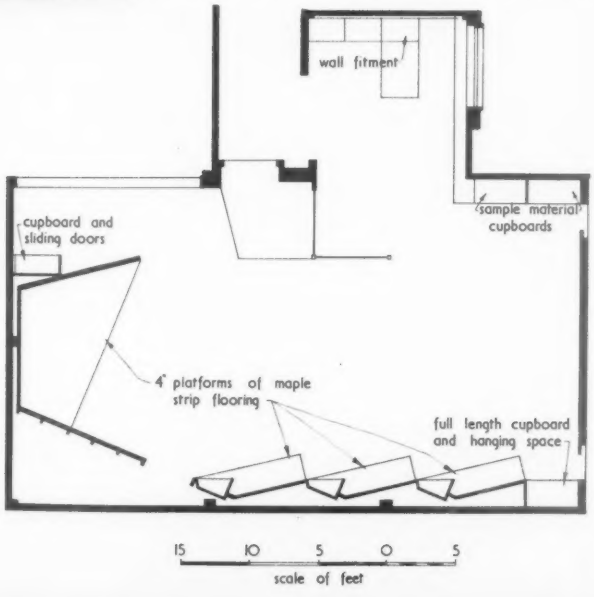
20

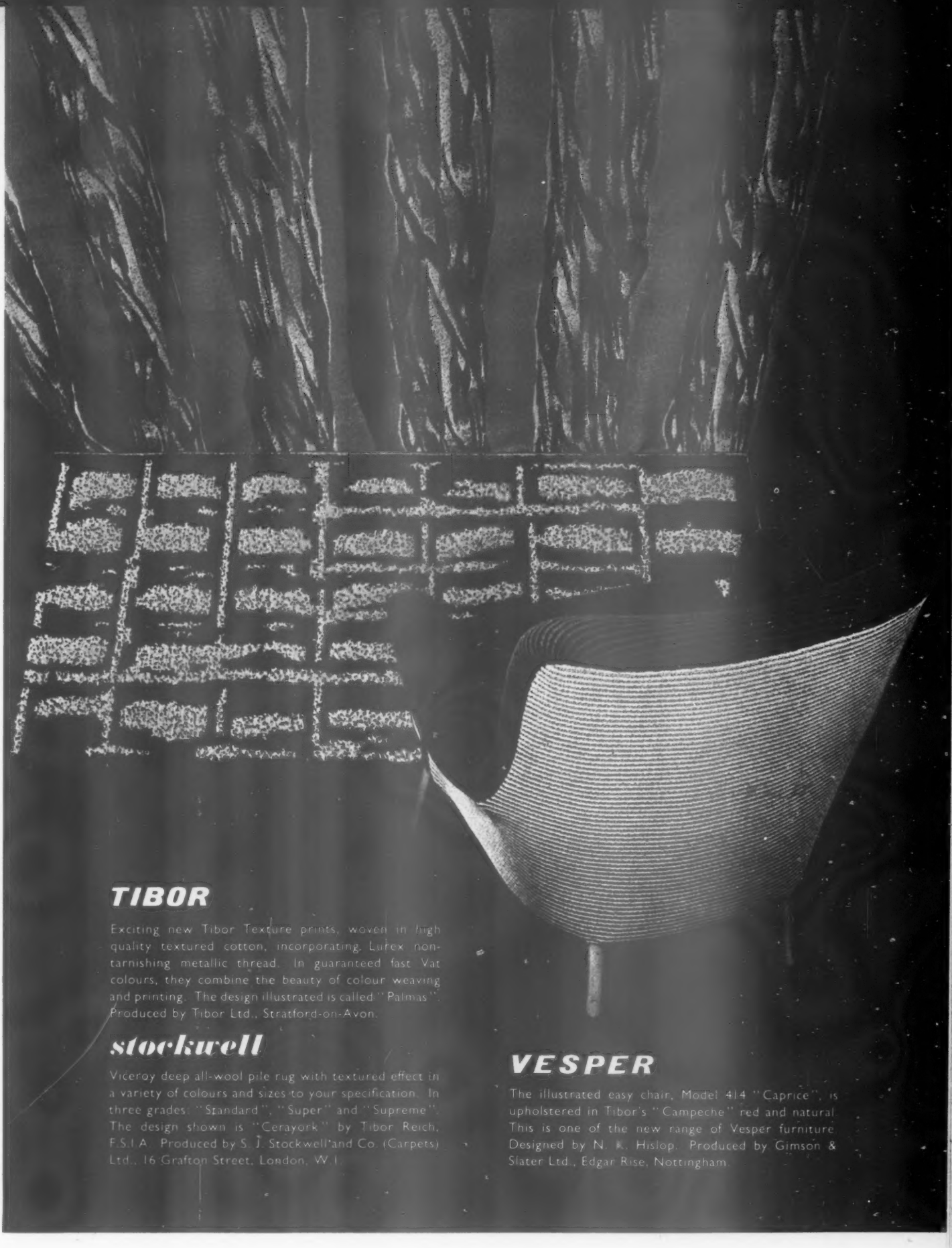
19, left, platform display: centre, industrial exhibits: right, vertical feature formed of terylene cord threaded through holes in steel rings. 20, *looking past vertical feature to end panel displaying ropes and fishing nets.*

SHOWROOM IN HARROGATE, YORKS

Designer: Hulme Chadwick

The ICI Terylene showroom in Hookstone Road, Harrogate, allows for widely varied display techniques, being divided into sections by panels of building board covered in woven cane and cotton with recessed bronze channels into which either shelf brackets or light fittings can be fixed at any level. The ceiling is of stove enamelled metal units which can be removed and rearranged, allowing any variation in the arrangement of the pendant light fittings. The vertical feature mounted on a platform of sycamore planks divided by ebonized strips is formed by terylene cord threaded through holes in the two steel rings; 'eyeball' light fittings are set in the mirror soffit. The arrangements for industrial exhibits are as in London, except for the use of the vertical panels for carrying captions only. The low ceiling strip over it is of fibrous plaster, the square


wall fitment
sample material cupboards
cupboard and sliding doors
platforms of maple strip flooring
full length cupboard and hanging space
15 10 5 0 5
scale of feet



TIBOR

Exciting new Tibor Texture prints, woven in high quality textured cotton, incorporating Lurex non-tarnishing metallic thread. In guaranteed fast Vat colours, they combine the beauty of colour weaving and printing. The design illustrated is called "Palmas". Produced by Tibor Ltd., Stratford-on-Avon.

stockwell

Viceroy deep all-wool pile rug with textured effect in a variety of colours and sizes to your specification. In three grades: "Standard", "Super" and "Supreme". The design shown is "Cerayork" by Tibor Reich, F.S.I.A. Produced by S. J. Stockwell and Co. (Carpets) Ltd., 16 Grafton Street, London, W.1.

VESPER

The illustrated easy chair, Model 414 "Caprice", is upholstered in Tibor's "Campeche" red and natural. This is one of the new range of Vesper furniture. Designed by N. K. Hislop. Produced by Gimson & Slater Ltd., Edgar Rise, Nottingham.

Interior of Dover Car Ferry Terminal finished in Nulon.

Photographed by courtesy of Dover Harbour Board

Architects: J. M. Wilson, H. C. Mason & Partners

NULON

SUPER EMULSION PAINT

For its superlative qualities Nulon Emulsion Paint was selected for the interior of the Dover Car Ferry Terminal. It is available in two finishes—'Felted Flat' and 'Satin Sheen', also in exterior quality 'Nulon Exterior'. Very easy to apply by brush, spray or roller it has remarkable spreading power and is most economical. Nulon dries in 1–2 hours, is free from smell, enabling rooms to be occupied immediately. It is ideal for stores, shops, hotels, offices, etc.

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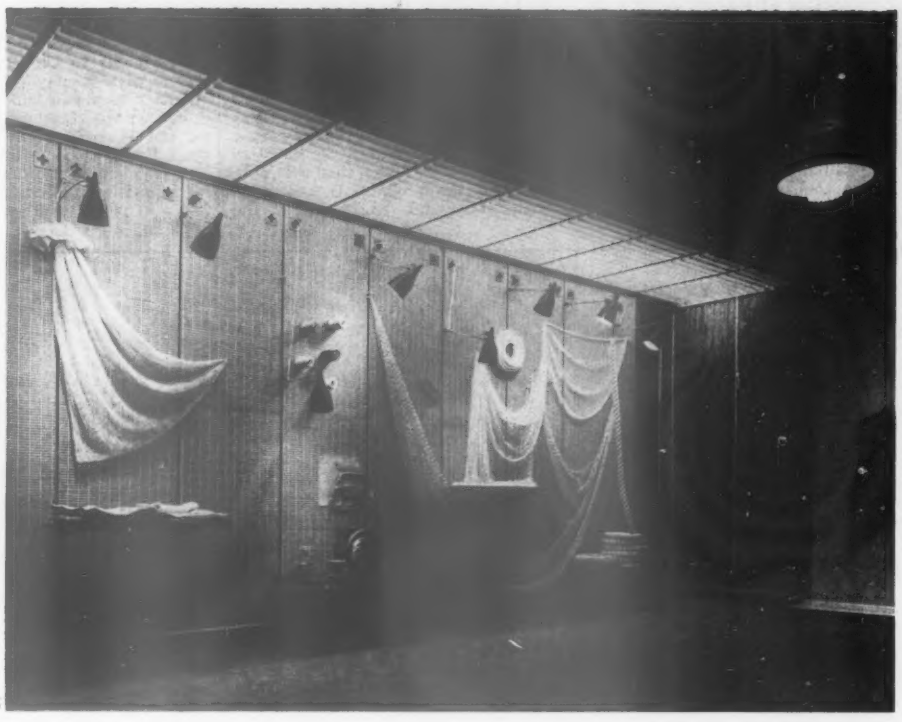
openings being covered with copper mesh for extract ventilation. Fresh air is introduced through the continuous grille on the riser between ceiling levels. The stage display has a side wall of narrow tongued and grooved hardwood; the beams over it have a bar on the back for fixing concealed lights. The mural by Warner Cooke depicting the uses of terylene is on unpolished cedar veneer, sealed after completion with hot wax.

21



22

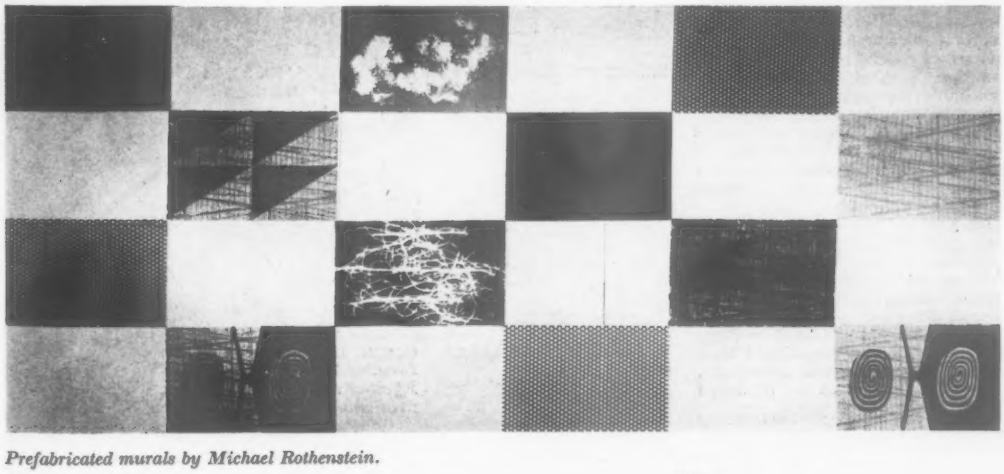
21, desk and wall fitment in sycamore and almond wood veneer. 22, close-up of the rope display showing light fittings fixed into recessed bronze channels.

2 DESIGN REVIEW

Prefabricated Murals

This is not the place to criticize murals, prefabricated or not, but the raw material of Michael Rothenstein's prefabricated murals has a rare and arresting combination of precision and imagination. This raw material consists of six designs printed by silk screen with waterproof plastic pigment on sheets of paper 20 inches by 30 inches. Wallpaper and textile design, under the influence of the seasonal rush to get out new ranges, is so sensitive to nuances of fashion that it perpetually tends to miss the imprint of style. This is why architects have the greatest difficulty in putting their hand on patterns that will articulate an interior without dressing it up. Five of these papers have the imprint of style rather than of fashion. They give the impression that the artist's mind is reacting to the stimuli that have been at the root of the architectural imagination of the last twenty years. The colour too is a shock of pleasure. It is sobering to notice that, however earnestly we train designers, a painter's colours usually have this effect.

The sheets are obtainable from Pre-fabricated Murals, Godstone Road, Bletchingly, Surrey. Prices: Loose sheets, in one colour, 7s. 6d., in two colours, 10s. 6d. Over 50 sheets, in one colour, 5s., in two colours, 7s. 6d. per sheet.

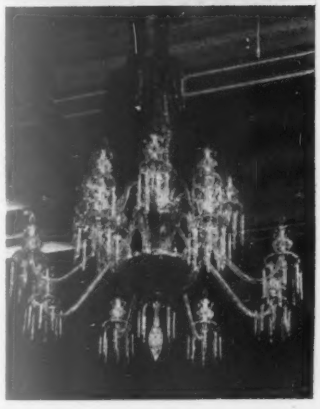


Prefabricated murals by Michael Rothenstein.

Waterford Glass Chandeliers

It is possible for the first time for over a hundred years to buy a new Waterford chandelier. This should be an event in the lighting industry. In fact it takes all the fun out of hunting for antique crystal, and may fill interior designers with uneasiness. In the century since the Waterford Glass factory shut down, gas lighting superseded candles, to be superseded in its turn by electric lighting. The uneasiness is not due to surprise that after half a century of clean, labour-saving, modern electric light an industrialist can confidently market the designs here illustrated. It is due to lack of certainty that anything we can offer can compete with the glamour of a crystal chandelier.

Electric lighting has great potentialities, but for the architect it is anything but labour-saving. The time and effort necessary to work out a satisfying scheme are hardly ever employed. Most people have not seen electric lighting to compete with the charm of candelabra. The



Two new Waterford glass chandeliers.

period of what was unfortunately called architectural lighting—concealed, diffused and deadened light—has taken some living down. It is now coming to be understood that some form of brightness and glitter is essential, except in the field of fluorescent lighting where science has jumped ahead of art again. The

magic of candelabra was in the combination of massed candles and faceted glass. The glitter of the crystal is what we need today. But the chandelier now offers us massed flex and faceted glass. The little saucers shaped to catch the wax from the electric light bulbs seem irrelevant. A vague disappointment is caused by the stillness of the flame-shaped bulbs.

Yet the twentieth century holds the answer to this problem. Since candles do not liven our decorations by their flicker, our artists supply us with mobiles to give back this lost movement to our flameless interiors. The traditional chandelier is a marvel of ingenuity for massing weak lights with the help of crystal. The directors of the Waterford Glass factory are right in thinking that crystal has something to offer to electric lighting. But this will only be so if the problem is looked at with skill and curiosity, if the brilliance of the material is matched by the brilliance of an artist's mind. The kind of mind that invented the mobile is the kind of mind that will bring magic to the crystal lighting fitting of today.

Where is such a mind to be found? I would respectfully urge the directors of the Waterford Glass factory to look for it among designers, young or eminent, or among sculptors of an abstract or constructivist bent.

D.R.

3 TECHNIQUES

ALUMINIUM ROOF COVERINGS

by Robert Maguire

Strictly speaking the title of this article is a misnomer, for, apart from the use of super-purity aluminium for some fully-supported roofing, aluminium as such is not used. In practically every case where we refer to aluminium we mean one or another of its alloys, and this has resulted in some confusion and much prejudice. Each of the many alloys has its own very distinct properties; some for example may be capable of taking high stresses while being subject to corrosion on extreme exposure, and others the very opposite. The wrong attribution of many diverse properties to aluminium in general has not augured well for its reputation as a building material.

*A small selection of alloys has been developed specially for use in building, and there can now be no doubt as to their efficiency, provided always that the right alloy is used in the right place.**

It is now almost platitudinous to point out that new materials, when first introduced, are usually pressed into the forms already developed for other materials which are superficially similar, and that only after considerable development do they assume forms sympathetic to their own nature. This was certainly the case with aluminium in its application to roofing, with the exception, surprisingly enough, of the very first known example—the church of San Gioacchino in Rome. Here, in 1897, the cupola and semi-cupolas were covered with thick (2 mm.) sheet, which was fixed with rivets.

When aluminium first became available at an economic price, metals had been used for roofing in three ways. These were (*a*) traditional fully-supported roofing, in lead, zinc and copper; (*b*) corrugated sheetings designed to span between purlins, e.g., the notorious 'corrugated iron'; and (*c*) a few more or less experimental examples of single-lap tiles, e.g., the cast-iron tiles on the Houses of Parliament. Of these, corrugated sheetings were the obvious choice for application of the metal, for several reasons. The traditional methods of laying fully-supported roofing required a malleable metal, and only very pure aluminium—not then an economic proposition—would be suitable. Single-lap tiles presumably appeared to have no promising future. On the other hand, the production of corrugated sheetings was ensured a safe market for industrial building purposes. This was fortunate, for besides providing a severe testing ground, industrial building gave scope for early development in a field where efficiency was put before æsthetic considerations.

The advantages of aluminium over other materials for corrugated sheetings soon became apparent; it withstood corrosion even in a heavily polluted atmosphere and so required little maintenance, it had great strength for its light weight, cutting down the cost of substructure, and moreover looked well, weathering to a matt grey colour.

The acceptance by architects (and partly by the public) of materials having a crisp engineering character has had two incidental results which have given an impetus to the more recent development of aluminium sheetings. First, they have been lifted out of the purely industrial field and put into general use; and second, the design of even the cheaper type of industrial building has been given much greater attention. The manufacturers of aluminium sheetings have responded to the resulting demands for improved systems of roofing and wall cladding and there is now not only a wide choice of orthodox corrugated sheetings with complementary ranges of flashings, closure pieces and other accessories, but also a number of more highly developed systems making fuller use of the potentialities of the material.

In the last decade it has also been possible to produce super-purity or commercial-purity aluminium at an economical price, and due to the comparatively high price of the other metals suitable for fully-supported traditional roofing, aluminium has now established itself as a highly successful substitute, although it has not as yet produced any significant change in technique.

More recently still, single-lap tiles of aluminium alloy sheet have appeared on the market.

orthodox corrugated sheetings

These sheetings are made from NS3 (B.S. 1470 : 1948), an alloy containing a small percentage of manganese, which increases the strength of the aluminium without any substantial sacrifice of durability. Their range of thicknesses varies according to the profiles used, but the most frequently used gauges are 18, 20 and 22 SWG (0.048 in., 0.036 in. and 0.028 in. respectively).

3-inch Pitch Sheet. This profile, 1, conforms to the familiar standard pattern developed for other materials, although it is not entirely suitable as an aluminium profile. It will span up to about 5 feet between purlins, but where loads are likely to be heavy or the roof likely to be walked on frequently, one of the specially developed profiles such as Industrial Trough should be used.

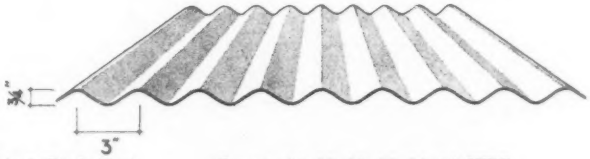
It is made in a great variety of lengths and widths; from 6 feet to 12 feet in length and with 8, 9½, 10, 12 and 14 corrugations in width. By adjusting the overlap of the sides of sheets to give a lap of 1, 1½ or 2 corrugations, the effective width of the sheets may be varied from 21 inches to 42 inches. In this way the cutting of sheets is avoided.

Owing to the shallow depth of the profile, 3-inch pitch sheeting is not suitable for roofs under 15° pitch.

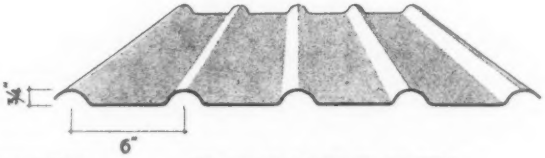
2⅝-inch Pitch Sheet. This profile, smaller but otherwise similar to the 3-inch pitch, is produced to conform with the North American standard profile known as '2½ inch by ¼ inch.'

Mansard Sheet. So called because it is reminiscent of the traditional batten-roll jointed lead on Mansard roofs, Mansard Sheet, 2, was designed primarily for the cladding of vertical surfaces. In spite of the limitation of a single-corrugation side lap, it has been used extensively for roofs, especially of houses. It may not be used for roofs of less than 22½° pitch.

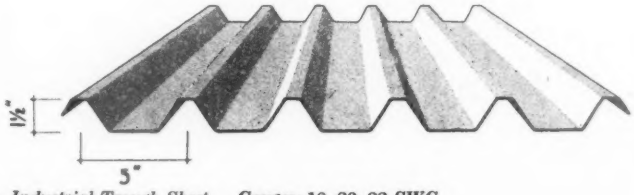
Industrial Trough Sheet. The design of this profile, 3, is a successful



1, *3-inch Pitch Sheet.* — *Gauges:* 18, 20, 22, 23, 24, 26 *SWG.* *Lengths :* 4 *to* 12 *feet.* *Effective widths:* 8, 9½, 10, 12, 14 *pitches.* *Minimum roof pitch:* 15°.



2, *Mansard Sheet.* — *Gauges:* 16, 18, 20, 22, 24 *SWG.* *Lengths:* 4 *to* 12 *feet.* *Effective widths:* 5, 6, 7 *pitches.* *Minimum roof pitch:* 22½°.

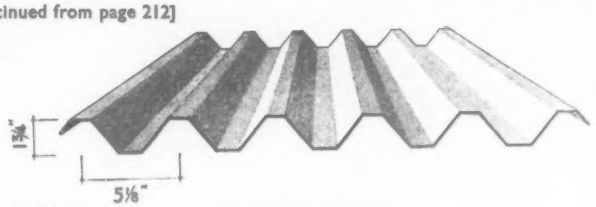


3, *Industrial Trough Sheet.* — *Gauges:* 18, 20, 22 *SWG.* *Lengths:* 4 *to* 16 *feet.* *Effective widths:* 5, 6, 7 *pitches.* *Minimum roof pitch:* 15°.

[continued on page 213

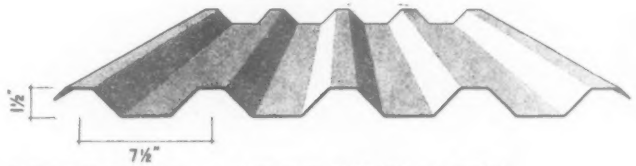
* For experimental evidence and a number of interesting case histories see *The Durability of Aluminium in Building*, published by the Northern Aluminium Co. Ltd., 1954.

continued from page 212]



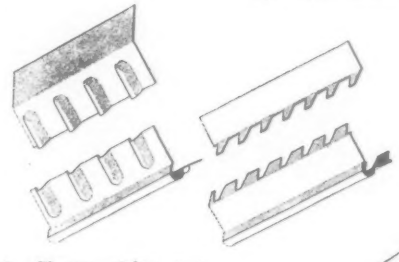
4, *Industrial Trough Type T Sheet.*

Gauges: 18, 19 *SWG.*
Lengths: 4 *to* 12 *feet.*
Effective widths: 5, 6 *pitches.*
Minimum roof pitch: 9°.

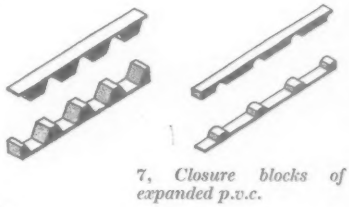


5, *Rogerstone Building Sheet.*

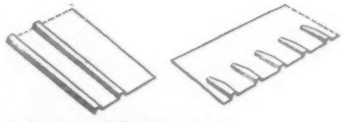
Gauge: 21 *SWG* (*others to order*).
Lengths: 6 *to* 12 *feet.*
Effective widths: 1, 2, 4 *pitches.*



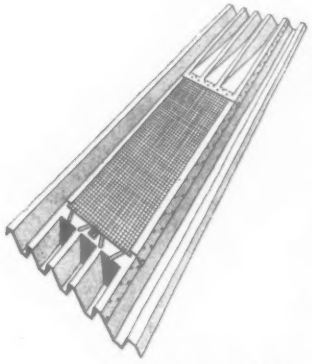
6, *Closure strips combined with preformed ridges and eaves flashings.*



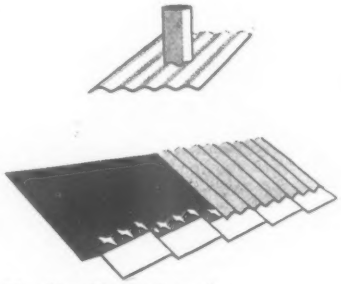
7, *Closure blocks of expanded p.v.c.*



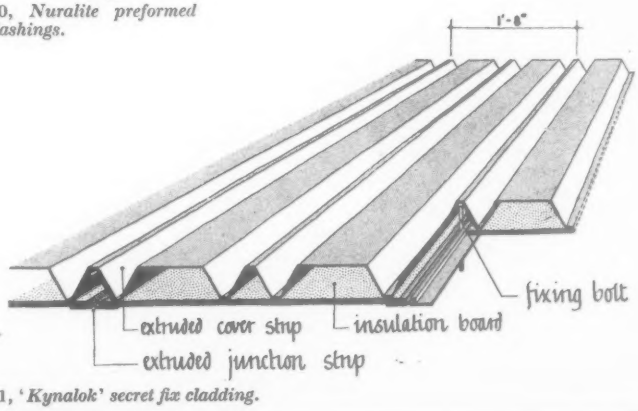
8, *Preformed flashings in aluminium alloy.*



9, *A standard rooflight.*



10, *Nuralite preformed flashings.*



11, '*Kynalok*' *secret fix cladding.*

attempt to use the properties of aluminium to greater advantage. The objectives were (*a*) to provide the maximum cover and strength with an economical amount of material, (*b*) to meet British Standard loading conditions over purlin spacings up to 7 feet, using 20 SWG sheet, (*c*) to resist denting by the boots of maintenance parties, and (*d*) to shed water quickly on low-pitched roofs.

The profile is asymmetrical, since to meet requirement (*c*) the crests are narrow, while the troughs are wide (as required by (*d*)). Even on low-pitched roofs—down to 15°—the one-corrugation side lap is sufficient.

Industrial Trough Type T Sheet. Although not as resistant to damage by foot traffic as the Industrial Trough Sheet, this type, 4, has the advantage that it may be used over purlin spacings of up to 9 feet and at only 9° pitch.

Rogerstone Building Sheet. This sheeting, 5, is not intended primarily for roofing, but for the construction of complete frameless buildings. Its profile is based on a 45° slope and a wide pitch, to provide general adaptability rather than efficiency in spanning between purlins. Nevertheless it may be used to span up to 9 feet.

Curved Sheetings. Some of the sheetings already described are available curved to constant radii.

Fixing. The standard method of fixing the sheets is by bolts, or drive-screws, through holes located in the crests of the corrugations. For fixing to metal purlins, a standard range of hook-bolts and U-bolts is available, and these are used with bituminous felt washers under the aluminium washers. Fixing to timber purlins or battens is most effectively done by drive-screw, a type of nail with a coarsely-pitched screw shank; these should have neoprene or butyl washers under their heads. The laps between sheets are secured by seam bolts.

Fastenings should preferably be of aluminium; with other metals there is always the danger of bimetallic corrosion enlarging the size of the hole and causing leaks or weakening the fixing. Hot-dip galvanized or sheradized steel fittings may be used, however, but in no circumstances copper, brass or bronze.

Accessories. The difficult problem of filling the spaces left by the corrugations at ridges and eaves has been met in various ways. Since preformed ridges are now a usual feature, one convenient method in use is to combine them with the closure piece, and to provide a similar arrangement for the eaves, 6. This avoids a multiplication of parts, but has the disadvantage of not taking up small inaccuracies in the profile of the sheeting. The only way of overcoming this last difficulty is to use an elastic material. A range of closure blocks in expanded p.v.c. is available, 7, suitable for use with 3-inch Pitch, Industrial Trough, Industrial Trough Type T and Mansard sheetings.

To make transitions between corrugated sheetings and other materials, strips of preformed flashing are supplied, 8. Some makers have enlarged their ranges of accessories to include features such as skylights, 9, and louvred ventilators; the 3-inch Pitch sheeting can also be used with the corrugated rooflights now made in resin-bonded glass fibre and perspex.

Nuralite Flashings. Owing to the danger of corrosion when aluminium comes into contact with other metals and with strongly alkaline substances, the use of other common flashing materials in conjunction with aluminium sheetings is restricted. One suitable material, however, is Nuralite, a thermo-plastic composition of asbestos and bitumen. A range of preformed flashings and closure pieces in Nuralite has recently been introduced, 10, and these have the advantage that they may be welded together and to the aluminium by means of a blow-lamp.

secret fix systems

Partly perhaps because the bolt-hole method of fixing cannot be guaranteed absolutely weathertight, and partly because the manufacturers feel that aluminium sheetings would have more appeal to architects for general purposes if the honest-to-goodness fixing bolts were concealed or eliminated (and also in the name of efficiency), a number of systems have recently appeared which have as their main characteristic some form of secret fixing. These systems, like their more orthodox forerunners, are designed to be used for wall cladding as well as for roofing.

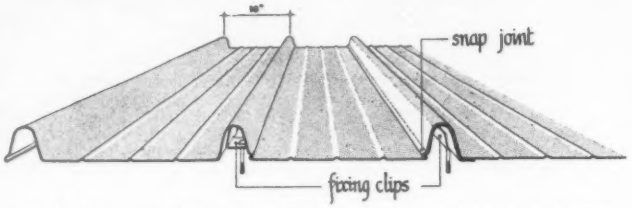
Kynalok Secret Fix Cladding. This system, 11, is probably the first in which extruded aluminium alloy sections have been introduced as standard components. An extruded section is used as a cover strip between individual sheets, and since it also slides over and retains the heads of the fixing bolts, it clamps the sheets to each other and to the supporting structure. Being more substantial than the thin rolled sheets, it also acts as a beam between purlins and enables the sheets to span greater distances.

An insulating board lining is an integral part of the system. Extruded junction strips are provided which receive the edges of the boards while forming a fixing groove for spring clips which retain both boards and sheeting until the cover strips are fixed. The thermal transmittance value of the complete cladding has been calculated at U = 0.238 (allowing for 15 m.p.h. air flow externally), and if this appears surprisingly low, it must be remembered that, in addition to the good insulation provided by the board and the 2 inch air space, the aluminium itself has a high reflectivity and low emissivity.

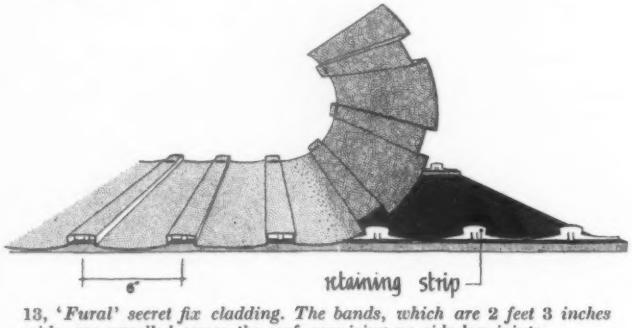
The spacing of the cover strips at 20 inch centres is intended to facilitate the combination of the cladding with other building elements based on a 40 inch module. Accessories to the system include 'perspex' rooflighting sheets moulded to the same profile, and standard roof ventilators.

Noral Snaprib Sheet. Less of a departure from conventional practice, this sheeting system, 12, uses the old principle of secret-nailed boarding: one edge only is fastened, and then covered by the adjacent edge of the next unit, at the same time providing a positive fixing for the latter. In this case the positive fixing and covering are achieved by a simple snap-joint incorporated in the edge corrugations. Concealed beneath this snap-joint are the fixing bolts for the lower sheet, and there are further bolts under the centre corrugation of each sheet engaging with special spring clips. To overcome the problem of off-set where the ends of sheets overlap, special overlap sheets with a reduced profile are supplied.

In passing, it is interesting to note that the makers have given each component part a serial number including the letter S (S1, S3, SA4,



12, '*Snaprib*' *secret fix cladding. The sheets are obtainable in lengths up to* 20 *feet.*



13, '*Fural*' *secret fix cladding. The bands, which are* 2 *feet* 3 *inches wide, are unrolled across the roof, requiring no side lap joints.*

etc.) and the confusion this is likely to cause perhaps warrants a plea on behalf of the unfortunate architect. The same manufacturers also refer to their alloys by the numbers 2S, 3S, etc., alloys which are already given the British Standard references S1A, NS3. Other makers have similarly given alloys of British Standard specification and number their own reference numbers, with the result that it is some time before one knows exactly which alloy, system or component part one is talking about.

Fural. Invented by the Swiss architect J. Furrer, this system, 13, was in use on the Continent for some time before its introduction into this country. It differs from other systems in two main respects: the material is in the form of a horizontally continuous skin which is unrolled across the roof, and a dovetail-action spring fixing replaces all bolts and perforations. The spring-clip principle has been applied to every flashing detail, and an exceptionally large range of standard components has been evolved in order to avoid any perforation of the skin.

fully-supported roofing

For fully-supported roofing aluminium alloys of high purity are the most suitable, as they are more easily worked to the traditional forms. Three grades of so-called pure aluminium are specified in B.S. 1470 : 1948—

S1A	...	99.8% minimum purity
S1B	...	99.5% ,, ,,
S1C	...	99.0% ,, ,,

The higher the purity of the metal the greater its durability and malleability, and for work of very high quality or where great ease of working is the main requirement, super-purity (99.99 per cent) aluminium is available, although it is not as yet covered by a British Standard. The alloys NS3 (1¼ per cent manganese) and NS4 (2 per cent magnesium) are also suitable.

All these materials are work-hardening, that is, their hardness is developed by cold working during manufacture, and can be regulated by adjusting the manufacturing process. In this way it is possible to retain durability while losing to some extent the softness of the metal which, although excellent for easy working *in situ*, tends to make the roof liable to unsightly denting and scratching. The materials are obtainable in five tempers, each designated by a suffix:—

O	... ...	fully soft
¼H	... ...	quarter hard
½H	... ...	half hard
¾H	... ...	three-quarters hard
H	... ...	fully hard.

The recommended gauges of sheet are 18, 20 and 22 SWG, and the widths of panels should not exceed 3 feet. The metals described are obtainable in sheet form and in coiled strip up to 2 feet 6 inches wide.

Substructure. Full support for the metal must be provided over the whole area of the roof, together with some means of fixing for the battens or cleats. Tongued and grooved boarding is of course ideal, but where fireproof construction (such as reinforced concrete slab) is necessary, dovetailed timber battens must be fixed flush with the surface of the screed. A point arises here which will be discussed in greater detail later: aluminium should be kept from direct contact with both timber and cement in situations where moisture may accumulate. It is therefore necessary to provide an insulating underlay, and bituminous felt (not of the self-finished kind) is suitable for this purpose.

Types of Jointing. For the main joints between sides of sheets there are three traditional forms. The *standing seam*, 14, is suitable for pitched roofs of 15° or more, and consists simply of a double lock welt at the top of the turned-up edges of the sheets. On flat roofs or pitches up to 15° a batten roll should be used. The *square batten roll*, 15, is formed around a batten of slightly tapered section (the taper allows for thermal movement). The sides of the sheets are dressed up and welted to the capping strip. The *conical roll*, 16, has a less heavy appearance and is an effective compromise between the other two methods.

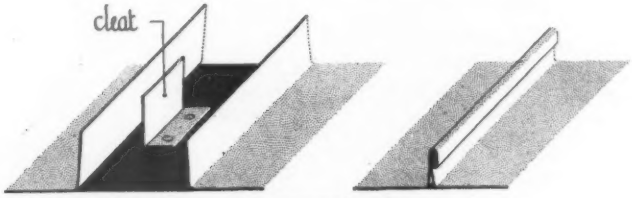
Transverse joints should be slightly staggered, and are normally formed of a double welt. On flat roofs a fall of 2 inches in 10 feet is necessary, and also a vertical 2 inch drip to accelerate run-off is recommended at 10 foot intervals. All flashings are worked *in situ* from the same material as the roofing.

Fixing. The fixing of the sheets is entirely by cleats formed of strips of the parent material. These are fastened to the substructure by aluminium nails, or clamped down by the battens.

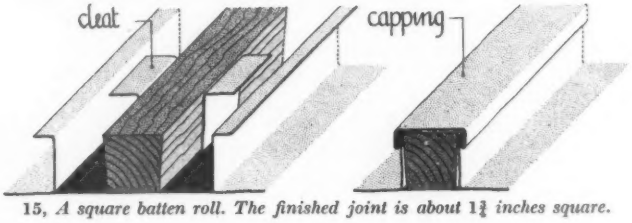
single-lap tiles

Two makes of aluminium alloy single-lap tiles have recently been introduced. The Prefatile, 17, has a single-corrugation side lap and an interlocking end lap into which the fixing clips are rolled. The makers claim that these tiles may be used at a minimum pitch of 9°. Special ridge and eaves tiles and flashings are also available.

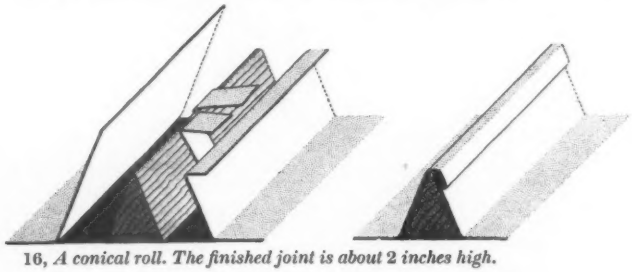
The Gordon tile, 18, is made in two patterns; lozenge—and panel—shaped. The lozenge tile has interlocking joints on all edges, and is fixed by nailing through a lug at the top corner. The panel tile has interlocking sides and a plain end lap.



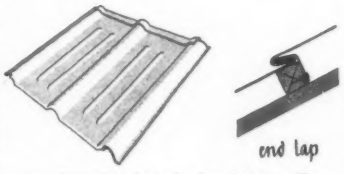
14, *A standing seam for fully-supported roofing.*



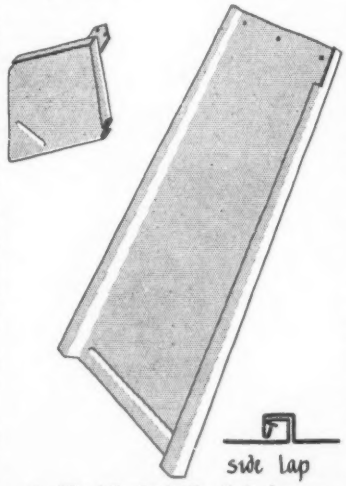
15, *A square batten roll. The finished joint is about* 1¾ *inches square.*



16, *A conical roll. The finished joint is about* 2 *inches high.*



17, *The 'Prefatile' aluminium alloy single-lap tile.*



18, *The 'Gordon' tile. Left, lozenge type; right, panel type.*

proximity to other materials

It has been mentioned earlier that aluminium should not be used in direct contact with various other metals, or with wood and cement, lime or plaster in situations where moisture is likely to collect. Contact with metals such as copper, brass, iron and steel gives rise to electrolytic action resulting in corrosion. In some instances, such as the use of aluminium sheeting on steel purlins, contact is inevitable, but action can be prevented by placing an insulating layer of suitable paint or mastic between the metals. Bituminous paint is suitable for this purpose. Contact with copper and brass should, however, be entirely avoided, while stainless steel, zinc and lead are harmless except in coastal districts.

Aluminium roofs should not be installed in positions where water from roofs of other metals is liable to discharge on to them.

Contact with cement and lime mortars in damp conditions may cause chemical attack on the aluminium, and so it is advisable to paint the metal with bituminous paint in places where this is likely, such as the turn-in of a wall flashing. Wood framing adjacent to aluminium should be painted (surprisingly enough) with an aluminium primer to prevent its absorbing moisture and becoming a potential source of corrosion.

[continued on page 216

WHERE

PAINT

MUST DO MORE THAN DECORATE

Magnet could be chosen for its looks alone ; for its lustrous gloss and dense film. For the variety of shades given by 30 intermixable colours. But first and foremost Magnet is a white lead base hard gloss paint —

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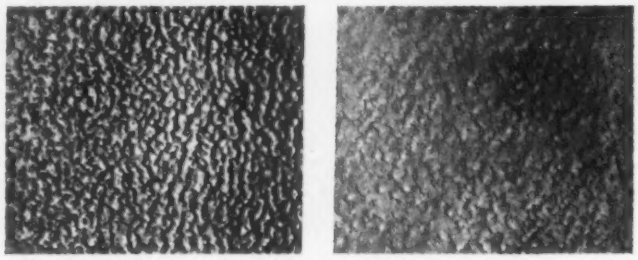


19, *Heavy and light 'Stucco' rolled finish for aluminium roofings.*

surface treatments and painting

Surface treatments for aluminium are of two kinds; mechanical textured finishes and chemical finishes.

Almost any low-relief pattern can be mechanically embossed on aluminium sheet or rolled products, but one type of finish has been developed specially for roofing purposes in order to overcome certain disadvantages in its appearance. These are that small dents, due to foot traffic during laying or maintenance, show up quite out of proportion to their size owing to the high reflective quality of the metal, and also that the bright rolled metal creates too much glare in the year or two before it has weathered. The 'stucco' finish, 19, is designed to break up the reflected light while not reducing the reflectivity of the metal—this being one of its most useful properties, making for good thermal insulation. The finish is available for commercial purity (S1C) metal and the alloy NS3 in sheet form, and for standard corrugated sheetings in most profiles.

Two chemical surface treatments are now available for aluminium roofings; the 'Alocrom' and 'Pylumin' processes. Both these processes were developed primarily to give a suitable key for painting and enamelling, but in reinforcing the natural oxide protective film they also provide some extra resistance to corrosion.

The 'Alocrom' finish is pale grey-green in colour, and the 'Pylumin' finish grey. They both have an attractive appearance, but since they were not intended as decorative treatments, no guarantee is given that colours will be even or matching, especially over large areas. They are not available for coiled strip.

The 'Fural' system of roofing is also available stove enamelled to any colour on the Munsell range.

acknowledgments

Figs. 5, 6, 12, 19: Northern Aluminium Co. Ltd.; 4, 7, 8, 9: British Aluminium Co. Ltd.; 10: Nuralite Sales Ltd.; 11: Imperial Chemical Industries Ltd.; 13: S. W. Ronald & Co. (London) Ltd.; 17: Prefatile (G.B.) Ltd.; 18: J. & J. Cuthbertson Ltd.

4 THE INDUSTRY

Paper-backed Veneers

The successful fixing of wood veneers has usually required the skilled hand of a craftsman, but the Aga Trading Company suggest it can be a much simpler operation. They are marketing a paper backed, but very thin wood veneer which can be pasted down, preferably using the proprietary glue 'Agastik.' As the veneer is so thin, the surface of the object should be smoothed, filled or faced with hardboard before covering with veneer.

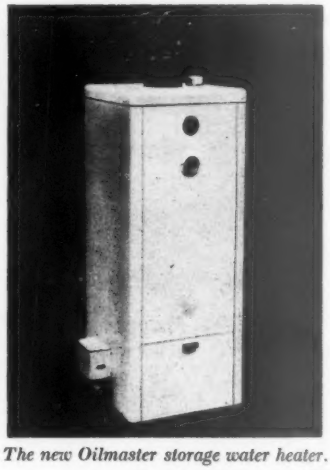
The 10 veneers are available in the following widths:—

Matt: 19½ inches wide, 3s. 10d. per yard. 27½ inches wide, 5s. 3d. per yard. 32½ inches wide, 6s. per yard.

Polished: 19½ inches wide, 4s. 6d. per yard. 27½ inches wide, 6s. per yard. Distributors: S. Leboff & Co., Ltd., 19 Virginia Road, London, E.2.

The Oilmaster Oil-fired Domestic Storage Water Heater

The article in the AR for July, 1955, on Domestic Oil Burning Equipment was concerned principally with forced draught burners using Class A gas oil. Since then the Oilmaster water heater has become available, providing an interesting and alternative system to those described in July. It is fitted with natural draught wickless burners for use with either paraffin or any gas oil (D.E.R.V.) up to 35 seconds Redwood and consumes about ¾ gallon a day. A 30-gallon storage tank is contained in the unit so that no further hot water tank is necessary. Two models are now in production, the 25,000 BTU model, which heats 30 square feet of radiating surface in addition to normal household hot water, and the 35,000 BTU model which heats 50 square feet of radiating surface as well as normal household requirements. In both cases space is left for an immersion heater. The smaller model costs £67 3s. 0d. and to reduce the initial installation cost of a large oil tank the firm supply a clip-on 4½-gallon daily service tank



The new Oilmaster storage water heater.

[continued on page 218

33% floor space saved 25% more desk area

If you are "pushed" for space . . . if you have to get more people in the same space . . . if you need *functional* office furniture designed specially for *your* business—then you should consider "Eight-for-Six" furniture.

Why? Well it seats eight where six used to be. It gives *more* desk area in spite of *reduced* floor space. It is "hand-tailored" to fit each job, i.e., with desks, pedestals and fitments as *you* need them. You can start with one or two work stations (or hundreds) and add as you expand. And each work station will be planned to give maximum output with minimum movement.

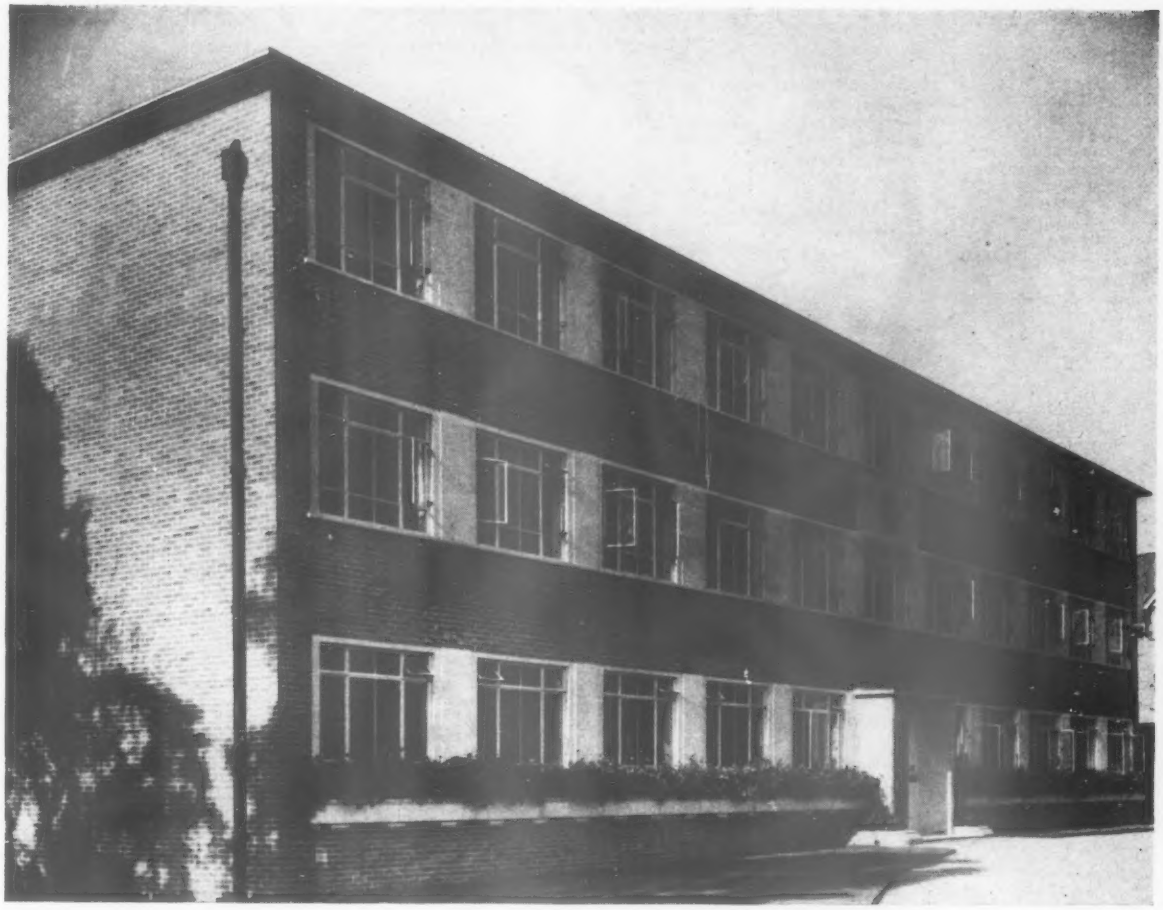
Your business can have this "time and motion" studied "Eight-for-Six" furniture—with or without noise-repelling partitions. And the cost is very similar to ordinary office furniture.

May we send you further details please? (*We will submit a plan without obligation for* your *offices.*)

● *Send for this fully illustrated free booklet showing wide variety of seating plans.*

Shannon Systems 846 EIGHT-FOR-SIX SERIES System OFFICE FURNITURE

The Shannon Ltd. — 35 Shannon Corner — New Malden — Surrey



New Building for GLYN MILLS & CO., Lampton House, Hounslow, Middlesex, faced with Ibstock Golden-Brown Multi hand-made bricks.

Architect: F. G. Broadbent, F.R.I.B.A., Goodhart Rendel & Partners. Contractors: Demolition & Construction Co. Ltd. Bricks supplied through Finnis, Ruault & Nicholls Ltd., London.

Much of the attractiveness of good brickwork arises from texture of bond and joint. When this is allied to bricks of light and varied colour—as with the Ibstock Golden-Brown multicolour sandstocks used for this new building for Glyn Mills & Co.—the fine appearance imparted is one also of great durability.

Ibstock FACINGS for Colour

Owing to present demand, supplies of facings of most types are booked for a long time ahead and reservations for 1956/57 are now being made.

IBSTOCK BRICK & TILE CO. LTD., NEAR LEICESTER - - - *'Phone IBSTOCK 391 (2 Lines)*
LONDON: L.M.R. GOODS DEPOT, WRIGHT'S LANE, KENSINGTON, W.8 - *'Phone WESTERN 1281 (2 Lines)*

continued from page 216]

for an extra £4; no figure is as yet available for the larger 35,000 BTU model.

*Turley & Williams, Ltd., Maidstone Buildings, 74-76, Borough High Street, London, S.E.*1.

Reflector Fluorescent Lamps

Particularly in display lighting, but also in any restricted space, one of the principal drawbacks to installing concealed lighting is the large space taken up by a reflector. The bulk of the cover fascia is often too much for present-day detailing, besides adding considerably to the cost. Faced with these problems Mazda have introduced a 40-watt 4-foot fluorescent tube with a 'built-in' reflector. The tube has the standard 2 pin caps, but over 60 per cent of its circumference is coated internally with a reflecting powder coating. This powder transmits some light so that the tube does not present too sharp a contrast between 'open' and 'closed' surfaces.

Altogether it is claimed that the new tube has 90 per cent of the luminous efficiency of an ordinary fluorescent lamp and provides 1.75 times more additional window brightness than a non-reflecting lamp. Its price is 13s. 9d. plus tax.

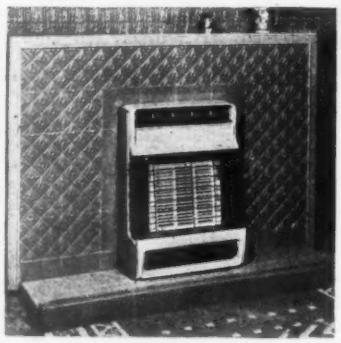
*The British Thomson-Houston Co., Ltd., Crown House, Aldwych, W.C.*2.

Getting the best out of an Electrical Installation

In most domestic jobs the architect is his own electrical engineer, just as he is his own structural engineer and his own heating and ventilating engineer. For though he can with some justification disclaim a specialist's knowledge in these subjects when he is working on larger, more complex jobs, when he is working on a house or flat he cannot. Unfortunately, literature on the bare electrical essentials is very hard to find. 'Getting the best out of an electrical installation,' published by M.K. Electric Ltd., is a modest ten-page affair, but has the great virtue of stating how to design a domestic circuit, which type of switch to use for each purpose, and how to tell a good switch when you see one. The book is free from either advertisers' or technicians' mystifications, is readily understandable and can be obtained from *M.K. Electric Ltd., Wakefield Street, Edmonton, London, N.*18.

The Gas Miser

One of the new fires to attract attention at the Building Exhibition



was Cannon (G.A.) Ltd.'s Gas Miser. This is a normal gas fire with ducts running behind the radiants in order to provide a certain amount of convected air, and a detachable guard rail is fitted in front of them. A regulator adjusts the rate of consumption to 36 cubic feet, 22 cubic feet and 12 cubic feet per hour, and it is claimed that the latter provides background heat for a 2,000 cubic foot room at a penny an hour. The makers have wisely considered the question of cleaning, and access to the hot air grilles is obtained by removing the top chromium-plated cover strip, and the lighter flint is easily changed by unhooking the fender. The Miser does, however, have a chamfered back base which looks as though it may harbour dust. The fire is obtainable from the usual retailers at a cost of £29 18s. 10d., including tax.

CONTRACTORS etc

Secondary School, West Hill, Putney. *Architects:* Powell & Moya. *General contractors:* C. Miskin & Sons. *Sub-contractors: heating and mechanical services:* Barrett & Wright Ltd. *Pre-stressed concrete floors:* Costain Concrete Co. *Damp proof course:* G. M. Callender & Co. *Bricks:* Richard Parton Ltd.; Stoneware Ltd. *Wood window frames:* Walter Lawrence & Son. *Slate facings:* The Bow Slate & Enamel Co. *Steel windows:* The Crittall Mfg. Co. *Structural steelwork:* Carter-Horseley (Engineers) Ltd. *Electrical installation:* The Berkeley Electrical Engineering Co. *Boiler house chimney:* Chimneys Ltd. *Balustrading and metalwork:* The Birmingham Guild Ltd. *Tarmacadam:* A. C. W. Hobman & Co. *Lightning conductor:* W. J. Furse & Co. *Patent glazing and aluminium windows:* Aygee Ltd. *Chain link fencing:* Chain Link Fencing Ltd.; Peerless Fence Products Ltd. *Precast concrete:* Malcome Macleod & Co. *Terrazzo:* W. B. Simpson & Sons. *Bituminous felt roofing:* Wm. Briggs & Sons. *Main staircase steelwork:* Scaffolding (G.B.) Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Asbestos spray:* Turners' Asbestos Cement Co. *Stove enamelled asbestos:* The Atlas Stone Co. *Sill tiles:* McKenzie Brytiles Ltd. *Glass domes:* T. & W. Ide Ltd. *Doors:* Veneercraft Ltd. *Wall tiling:* Dennis M. Williams. *Roller shutters:* Dennison, Kett & Co. *Wood block and strip flooring:* Horsley, Smith & Co. (Hayes). *Thermoplastic, rubber cork and P.V.C. sheet flooring:* Semtex Ltd. *Remote control gear:* Arens Controls Ltd. *Ironmongery:* Alfred G. Roberts Ltd. *Sliding folding door gear:* E. Hill Aldam & Co. *Cloakroom fittings (metalwork):* R. Smith (Horley) Ltd.; *(woodwork):* W. H. Gaze & Sons. *Main entrance doors:* Fred'k Sage & Co. *Metal faced ply:* Venesta Ltd. *Horticultural works:* Gilliam & Co. *Oil and emulsion paints:* Hadfields (Merton) Ltd. *Distemper:* The Walpamur Co. *Alkyd rubber varnish:* Vitretex (England) Ltd. *Staircase mosaic:* Philip Suffolk. *Reinforced plaster partitions:* Pantentee: Highworth Processes Ltd.

Buildings in the Gold Coast. *Architects:* James Cubitt and Partners.

Kumasi College of Technology: General contractors: Gee, Walker & Slater Ltd.

Sekondi Training College and Secondary School: General contractors:

[continued on page 220

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WE INVITE YOU
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Visit the Shell and BP Display

'OIL FUEL IN INDUSTRY'

At the Factory Equipment Exhibition, Earls Court, 9-14 April

OIL FUEL IN INDUSTRY, the Shell and BP display, is the central feature of the Factory Equipment Exhibition at Earls Court this year. It covers 12,000 square feet of floor space and is the largest display of its kind ever assembled in this country.

Shell-Mex and B.P. Ltd., in co-operation with many equipment manufacturers and the Factory Equipment Exhibition organisers, are staging a comprehensive display of oil-burning equipment for space heating, steam raising and other factory heating processes. This is the chance of a lifetime. It may be many years before there is another opportunity to see such an interesting and informative display on the subject of oil-fired heating—the most effective, flexible and labour-saving form of heating now available to British Industry.

continued from page 218]

B.B.C. Building Contractors.

Sekondi Regional Library: General contractors: B.B.C. Building Contractors Ltd. *Sub-contractors: Terrazzo tiling:* Addi Ltd.

Industrial Development Corporation Showrooms and Offices, Accra. General contractors: Messrs. African Finance and Investment Corporation Ltd.

Guest House in Accra and Gold Coast Legion Memorial Hall, Accra. General contractors: The Construction and Furniture Co. (West Africa).

The electrical sub-contractors for all the above-mentioned West African buildings were Drake & Gorham (Contractors) Ltd.

Railway Station at Potters Bar, Middlesex. *Architects:* H. H. Powell, Architects' Department, British Railways, Eastern Region. *Consulting Structural Engineer:* A. E. Beer (main station building). *General contractors signal box, covered bench, goods offices, main station building, platform buildings, finishes to subway and ramps, external works:* Kirk & Kirk Ltd.; *Station master's house:* Samuel Worboys Ltd. *Sub-contractors: concrete blocks:* Broad Manufacturing Co. *Bricks:* Sydney A. Hunter Ltd. *Structural steel and pressed metal:* Henry Hope & Sons. *Pre-cast concrete roof beams:* Concrete Ltd.; Shockcrete Ltd. *Slate sills:* The Bow Slate & Enamel Co. *Special roofings:* D. Anderson & Son. *Roofing felt:* Highways Construction Ltd.; D. Anderson & Son. *Glass:* Aygee Ltd.; The Crittall Manufacturing Co. *Wood block flooring:* Hollis Bros. *Patent flooring:* The Marley Tile Co. *Cast glass dome lights:* T. & W. Ide Ltd. *Central heating and gas fitting:* W. Richardson & Co.; Matthew Hall & Co. *Gas cookers:* General Gas Appliances Ltd. *Gas water heater:* Ascot Gas Water Heaters Ltd. *Boilers:* Auto-Control Boilers Ltd.; Ideal Boilers & Radiators Ltd. *Electric wiring, telephones:* British Railways. *Electric light fixtures:* Falk Stadelmann & Co.; The General Electric Co.; The Merchant Adventurers of London Ltd.; Hume Atkins & Co.; Ionlite Ltd. *Door furniture:* James Gibbons Ltd. *Furniture and ticket office fittings:* A. J. Binns Ltd. *Collapsible gates:* Potter Rex Ltd. *Plumbing:* J. H. Shouksmith & Sons. *Sanitary fittings:* Rownson Drew & Clydesdale Ltd.; William E. Farrer Ltd. *Pressed metal lockers:* G. A. Harvey & Co. (London); James Gibbons Ltd. *Pressed metal doors:* Williams & Williams Ltd. *Sunblinds:* J. Avery & Co. *Metal windows:* Henry Hope & Sons; The Crittall Manufacturing Co.; Aygee Ltd. *Plaster:* Pollock Bros. (London). *Joinery: hardwood doors:* Beves & Co. *Tiling:* Carter & Kernahan Ltd.; St. James Tile Co. *Furniture:* Conran Furniture, Leabank Office Equipment Ltd.; George Parker Ltd.; Beves & Co. *Leather cloth for seating and paint:* Imperial Chemical Industries Ltd. *Office fittings, ticket office:* D. Burkle & Sons. *Clocks:* Gent & Co. *Water supply:* Barnet Water Co. *Vitreous enamelled signs:* Mead McLean & Co. *Ticket collector boxes and traffic barrier:* Holland & Hannen & Cubitts Ltd. *Neon signs:* Claude-General Neon Lights Ltd.

Hospital at Alexandria, Dunbartonshire. *Architect:* J. L. Gleave. *Consulting engineers: structural:* George Davie; Crawford & Partners. *Heating, ventilating and electrical:* Ian Hunter & Partners. *Quantity surveyors:* A. L. Currie & Brown. *General contractors:* Angus M. MacDougall & Co. *Sub-contractors: Civil engineering contract: reinforced concrete foundations (stage 1):* Crowley Russell & Co. *Reinforced concrete foundations (stage 2):* Angus M. MacDougall & Co. *Steel work, metal staircases and balconies:* Redpath, Brown & Co. *Precast concrete floor and roof beams:* Concrete Ltd. *Precast ground floor beams:* Girling's Ferroconcrete & Co. *Concrete reinforcement:* The Expanded Metal Co. *Joiner, casements:* John Cochrane & Co. *Assembly panel:* James Y. Keanie Ltd. *Plumber, cast lead, gas fixtures and fittings, water supply:* William Fleming & Co. *Sanitary fittings (Shanks) supplied by* Thomas Graham & Co. *Plasterwork:* R. Y. Ritchie & Co. *Tile work (stage 1) and reinforced concrete mullions:* Toffolo Jackson & Co. *Tile work and terrazzo (stage 2), wall finish:* John Youdon & Sons. *Roofing (stage 1):* William Briggs & Co. *Roofing (stage 2):* Ruberoid Co. *Ironmongery:* Parker, Winder & Achurch. *Rubbish hoists, dark blinds:* John Bryden & Son. *Flooring:* Semtex Ltd. and Korkoid Decorative Floor (*stage 1*); George Stevenson (Gesco Cork) (*stage 2*). *Electrical wiring (stage 1):* Jas. Kilpatrick & Son. *Electrical wiring (stage 2). Electric heating:* Claude Hamilton & Son. *Fire alarm bells:* Jas. Kilpatrick & Son; Claude Hamilton & Son. *Lifts:* Pickerings Ltd. *Heating (central) (stage 1):* James Combe & Son. *Heating (central) (stage 2) and ventilation:* G. N. Haden & Sons. *Heating (grates in cottages):* Alexander Dunn Ltd. *Electric light fixtures:* Merchant Adventurers; Frederick Thomas. *Telephones:* G.P.O.; Standard Telephones & Cables Ltd. *Clocks:* Gent & Co. *Painter:* Guthrie & Wells. *Kitchen equipment:* James Stott & Co. *Roller shutters:* William Holt & Co. *Laundry:* D. & J. Tullis Ltd.; Thomas Bradford & Co. *Furniture supplied by* Wylie & Lockhead Ltd.; Findlater Smith Ltd.; David Elder; D. MacDonald Bros.; Watson (*typewriters, desks, etc.*). *Sterilizing equipment and electrical medical equipment:* Ministry of Works. *Hose reels and fire appliances:* Pyrene Co. *Metal windows:* Henry Hope & Son. *Pressed metal water tanks:* Braithwaite & Co. *Bed screens:* John Weston & Co. (Medino Screens). *Glass:* Scottish National Glass & Glazing Co. *Stair-treads:* Ferodo Ltd. *Shrubs and trees:* Sportsworks Ltd.

Secondary School, Herne Bay, Kent. *Architects:* E. D. Lyons, L. Israel and T. B. H. Ellis. *Consultants: structural:* Malcolm Glover & Partners. *Heating and electrical:* Stinton Jones & Partners. *Quantity surveyor:* Thurgood, Son & Chidgey. *General contractors:* J. J. Clayson & Son. *Sub-contractors: structural steelwork:* Matthew T. Shaw & Co. *Roofing felt:* General Asphalte Co. *Roof lights:* Henry Hope & Son. *Metal windows:* J. Thompson Beacon Windows Ltd. *'Accotile' flooring:* Neuchatel Asphalte Co. *Wood floors:* Horsley Smith & Co. *Roller shutters:* Shutter Contractors Ltd. *Gym kit racks and balustrading, etc.:* The Wessex Guild. *Terrazzo pavings:* Fendalls Stone & Paving Co. *Curtain tracks:* John Lewis & Co. *Flooring:* Marbolith Flooring Co. *Sliding door gear:* J. W. Hall & Co. *Terrazzo partitions:* Enfield Stone Co. *Towel guards:* Venesta Ltd. *Ironmongery:* James Gibbons Ltd. *Metal valances and glass dome lights:* Haywards Ltd. *'Carda' windows:* Holcon Ltd. *Cast iron chimney cap:* Chimney's Ltd. *Lettering and numeral plates:* Dales (Lettering) Ltd. *Sanitary fittings:* John Bolding & Son.

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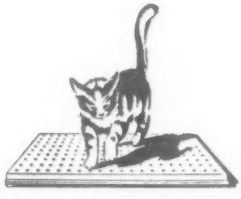

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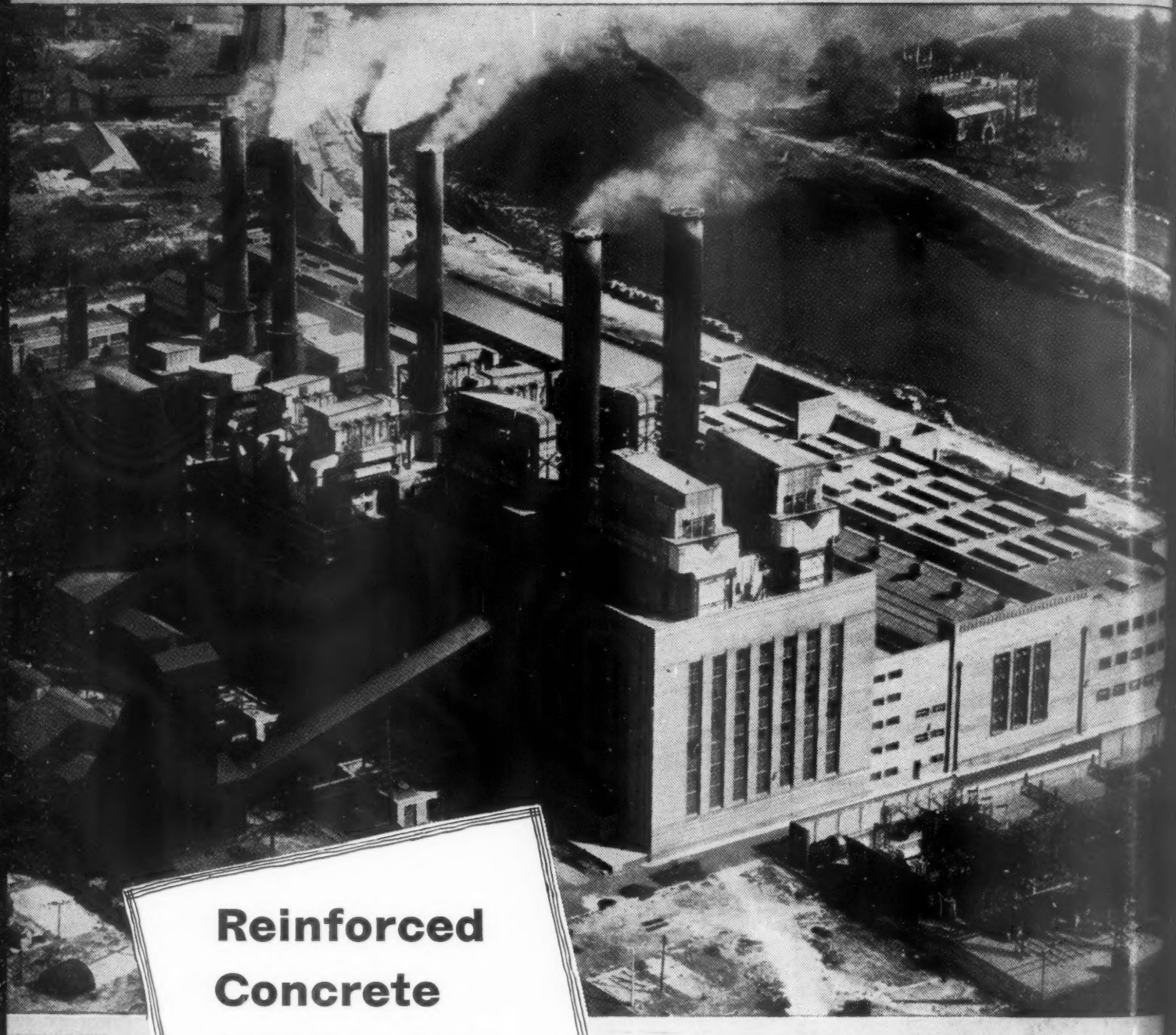

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